DOCUMENT RESUME

ED 120 277 UD 015 775

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TITLE The Quality of Life in Eight American Cities: Selected Indicators of Urban Conditions and Trends.
INSTITUTION National League of Cities, Washington, D.C.
SPONS AGENCY Department of Housing and Urban Development, Washington, D.C.
PUB DATE Mar 75
NOTE 265p.

EDRS PRICE MF-$0.83 HC-$14.05 Plus Postage
DESCRIPTORS Air Pollution Control; Educational Needs; Employment Opportunities; *Environmental Criteria; *Environmental Research; Health Needs; Housing Needs; Income; *Life Style; *Measurement Techniques; National Surveys; Quality Control; Research Methodology; Security; *Urban Environment

ABSTRACT

This volume summarizes a two-year research project funded by the Department of Housing and Urban Development through the National League of Cities. The National League of Cities, which manages an urban research program called the Urban Observatory subcontracted the work to member Observatories in the cities of Albuquerque, Atlanta, Denver, Kansas City (Missouri and Kansas), Nashville, and San Diego. The project, initiated in the summer of 1970, was completed in the spring of 1972. The inquiry was limited to six social domains: income and employment, health, education, public safety, housing, and air pollution. For each domain there was at least one indicator on which information was uniformly gathered by each of the network cities. In addition, the research staffs were encouraged to develop other measures of social conditions on which local data was readily available and which highlighted important trends or problems. The text is divided into two major sections. The initial chapters provide an historical overview and theoretical discussion of central issues involved in social reporting, social indicators research, and social monitoring. The remainder of the volume is concerned with the development and application of specific measures to the six social domains selected for investigation. (Author/JM)

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THE QUALITY OF LIFE IN EIGHT AMERICAN CITIES:
SELECTED INDICATORS OF URBAN CONDITIONS AND TRENDS

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by

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March, 1975

UD 015775

The research and studies forming the basis for this report were conducted pursuant to a contract between the Department of Housing and Urban Development and the National League of Cities. The substance of such research is dedicated to the public. The author and publisher are solely responsible for the accuracy of statements or interpretations contained herein.

PREFACE

This volume is a report on the quality of life in eight American cities. It is the summary of a two-year research project funded by the Department of Housing and Urban Development through the National League of Cities. The National League of Cities, which manages an urban research program called the Urban Observatory, subcontracted the work to member Observatories in the cities of Albuquerque, Atlanta, Denver, Kansas City (Missouri and Kansas), Nashville, and San Diego.

The project, initiated in the summer of 1970, was completed in the Spring of 1972. It was the first attempt to develop selected measures of urban trends and conditions on an inter-city comparative basis.

In the course of developing the proposal, a decision was made to limit the inquiry to six social domains. These were income and employment, health, education, public safety, housing, and air pollution. A limited number of quality-of-life indicators were selected within each domain. It was agreed that for each domain there would be at least one indicator on which information would be uniformly gathered by each of the network cities. In addition, the research staffs were encouraged to develop other measures of social conditions on which local data was readily available and which highlighted important trends or problems.

Cities were further asked to develop measures in at least one domain in greater depth than would be required of the others. Thus, the Nashville Observatory was asked to focus special attention on education indicators and the San Diego Observatory was asked to concentrate efforts on the development of health measures.

Quality-of-life research in each of the cities was directed by university-based professionals who worked in close collaboration with city and county officials in their localities. On the academic side the professions represented were sociology, social psychology, economics, engineering and social work. On the government side consultation and advice was available from elected officials as well as from highly informed civil servants.

Perhaps the most important consequence of this research effort derived from the inter-disciplinary interactions which took place among the directors, through correspondence and at several national meetings where problems were discussed about inherent difficulties in measuring the quality of life of large urban centers. These included definitional problems (what, after all, is meant by "the quality of life?"), methodological problems (how does one go about deciding which indices to select for measuring the quality of life?), strategic problems (what is the best approach, theoretical-deductive or empirical-inductive?), ethical problems (how will the information be used?), and problems of interpretation (how far can one go in drawing inferences from limited sets of data?). These and other problems will be discussed throughout this volume.

This book is entitled "The Quality of Life in Eight American Cities," but its subtitle, "Selected Indicators of Urban Conditions and Trends," accurately describes its contents. The main title was selected for emphasis in order to establish communication with a wider range of readers, those interested in improving life in urban communities and those who might have overlooked the volume had it been identified by its technically more accurate subtitle.

The text is divided into two major sections. The initial chapters provide an historical overview and theoretical discussion of central issues involved in social reporting, social indicators research and social monitoring. The remainder of the volume is concerned with the development and application of specific measures to the six social domains selected for investigation.

Future social reports will undoubtedly include measures related to leisure and recreation, political participation, transportation, social mobility and the like. Further consideration will undoubtedly be given to the uses to which such reports can be put as well as in identifying potential users of such documents. The social indicators movement is a relatively new phenomenon. If this report, which is admittedly limited in scope and confined to the use of readily available data, can help advance the state of the art, it will have served its purpose.

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Chapter 1

DEFINING THE QUALITY OF LIFE

What is Meant by Quality of Life?

The term "quality of life" has become an ubiquitous concept in the current American vocabulary. It appears in the public pronouncements of politicians and social reformers and in the discourse of ordinary citizens. What does it mean? There is no precise definition. The term "quality" itself is a vague abstraction. It is defined as that "something" which distinguishes the essential nature of anything in its relation to other things. It is used in connection with modifiers such as "good," "bad," "mediocre," "indifferent," etc. Its meaning must be grasped intuitively since the properties of objects, conditions and phenomena vary infinitely.

The problem of definition becomes even more complicated when we talk about the set of conditions referred to as "the quality of life." Harland has suggested that its meaning can only be approached by comparison with inexact, yet comparable, analogs. It is synonymous, he says, with concepts like "progress, well-being, development, general welfare, the good life, the good society, the great society, utopia, distributive justice, the just society, level of living, standard of living, norm of living, social progress, social well-being, social development, living conditions and life styles including poverty, destitution and affluence."[1]

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[1] Douglas G. Harland, "Social Indicators in a Futures Context," unpublished paper given to the Ottawa, Canada, Futures Society, November 25, 1971, pp. 1-2.

These are, says Harland, concepts which have been used by theologians, social philosophers, and political activists at one time or another.

The problem of definition is further complicated by the fact that conceptions of an acceptable or good quality of life vary with historical time, geographical location, social norms and individual preferences. The quality of life at any given time or place embodies the collective preferences of social classes and individuals and, says Harland, has reference to the "totality of those goods, services, and conditions which are delineated as constituting the basic nature of life--the essential elements of life which are articulated as basic human and social needs and wants."[2] This definition does not help identify the precise operations required to measure it, nor does it provide directives for identifying the totality of goods, services and conditions which constitute the basic nature of all life.

Identifying the Quality of Life

Harland proposed five solutions to the problem of identifying basic human and social needs, wants and preferences. These he labels the "testimonial," "ascriptive," "hypothetical," "stipulative," and "speculative" approaches.

The testimonial approach. This involves simply asking individuals to state what they regard as acceptable standards, or constituent elements, of the good life. These subjective, individual choices can then be summed to produce a majority consensus--a calculus of "social goods." Such additive and averaged panoplies of "satisfaction indices," based on majority vote, constitute the desired level of a "quality" society.

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[2] Ibid., p. 3.

Having identified the desired norms, measurements can then be made to ascertain the discrepancies between them and the contemporary state of the given conditions. Quality of life measures of this kind have in recent years been referred to as "social indicators." When such measures are repeated over time, statements can be made about whether the condition or state of affairs is improving, getting worse or has remained unchanged. In addition, if such periodic data is disaggregated by variables like age, race, social class, sex, geographic area, etc., more precise statements can be made about the quality of life with respect to each condition for subgroups within the population and at different points in time.

The ascriptive approach. This method requires a content analysis of existing group values "which manifest themselves as social norms" by surveying dominant themes in newspapers, television and other popular media. Harland notes that the ascriptive approach will not tell us what the correspondence is between any individual's assessment of the quality of life as compared with the group consensus, at least not without further empirical inquiry.

The hypothetical approach. This approach bypasses the first two and depends upon arbitrarily establishing the content of the quality of life. The actor who makes this arbitrary evaluation is, in effect, offering an operational definition which has no higher standing than a working hypothesis. Thus, "the quality of life remains to be validated by empirical, scientific study or either personal subjective values or group values."[3]

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[3] Ibid., p. 5.

The stipulative approach. This also entails an arbitrary "specification of the content of the quality of life." However, in this instance there is no intention of submitting the decisions to empirical study since the stipulative approach is based on the assumption that people don't know what's good for them. "Perhaps the most acceptable example of this is the situation of an infant or mentally ill person not being capable of articulating his needs and wants."[4] Historically, stipulations concerning proper ethical conduct have been delegated to theologians and assorted moral philosophers.

Finally, the speculative approach is used "exclusively for the purpose of social forecasting. To engage in the art of speculating the future content of quality of life, is, by definition, to exclude the immediate possibility of verifying our assumptions." In the stipulative definition, the stipulator is, in essence, asserting that he knows what is best for himself and for others. In the speculative approach, the forecaster, "excludes the possibility of having such certain knowns simply because the future is an unknowable quantity."[5]

Quality of Life Elements

Whatever methods are used to determine the constituent elements of "quality of life," Harland suggests that they will include "human and social needs and wants (ranging) from common biological requirements for food, water, clothing and shelter to culturally influenced values and norms which may differ from subculture to subculture, from region to region, and from individual to individual. Any comprehensive measurement technique of quality of life must reflect a wide variety of elements--

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[4] Ibid., p. 5. [5] Ibid., pp. 5-6.

physical well-being, material goods and services as in consumer consumption, and conditions or "states of affairs" such as environmental attractiveness, civil rights and social status."[6] .

Social Indicators - A Proposed Definition

The elements which make up the quality of life of a community are referred to by Harland as "welfare commodities." These welfare commodities can be goods, services or conditions. The quality of life, then, "is the composite aggregate of all welfare commodities."

> A social indicator is defined as a measure of goal attainment of a welfare commodity. That is, a social indicator is a partial measure of quality of life. Development of social indicators begins with articulation of welfare commodities. For each welfare commodity a concrete goal is specified. The goal is then operationally defined. Finally, an appropriate goal attainment measurement scale is designed.[7]

Harland has made a number of important statements concerning social indicators which require close examination. A social indicator is "a partial measure of quality of life." The inference here is that the quality of life is the sum of a series of partial measures of what he terms "welfare commodities." There are two assumptions implicit in this proposition. One is that we can identify and measure all of the important constituent elements which relate to the quality of life. The second assumption is that we can assign a weighted index number to each partial measurement which can be added to give a final quality-of-life score.

The first assumption, though it presents some problems, is not insoluble. Harland and others have drawn up lists of "welfare commodities" as candidates for measurement. These lists vary in size and content, but it is entirely conceivable that some consensus will ultimately be possible concerning what should be included or excluded from consideration as quality of life measurements. Harland's proposed list will be discussed later in this chapter.

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[6] Ibid., pp. 6-7.

[7] Ibid., p. 7.

With respect to the second assumption, the solution is not so obvious. Suppose, for example, a decision is made to develop measures of the quality of community health and the level of public safety. Suppose thatsuch measures are actually made and scores are ultimately obtained which specify these partial measures of life quality. How shall we go about the job of assigning weights to health and safety? Should health be given a weight in the final quality of life score twice that of public safety?, three times as much?, or some other value? Harland does not confront this question.

An important current measure of economic well-being is the Gross National Product (GNP) which, simply put, is the aggregate sum of the value of all goods and services produced annually in the United States. This measure has the virtue of being easily derived because a monetary value is assigned to each of the goods and services included in the GNP. Summation of such values is a straight-forward proposition conforming to the laws of arithmetic.

In recent years, however, the assumptions which underlie the procedures for arriving at a final total sum for the Gross National Product have been challenged. The challenge comes from those who argue that adding the values of all goods and services is unwarranted since some are provided to undo evils which result from certain maladaptive consequences of the productive process. Should the costs, for example, of controlling air pollution be added to those goods which produce the pollution in the first place? It has been argued that it would make more sense to *subtract* such costs from the GNP. Whether or not this is ultimately done, the fact remains that calculating the GNP will still permit the laws of arithmetic to be used in determining the net result.

Harland's proposal involves the assigning of weighted values to various types of welfare commodities for purposes of summation. This is at best a questionable if not illegitimate procedure.

Harland proposes the construction of an ordinal scale in which various constituent elements defining the quality of life are ranked from high to low. Rankings of elements in terms of higher or lower, better or worse are often performed. Such rankings may be precise as in the case of ordering individuals in established heirarchies like the military. However, the assigning of dubiously derived and weighted numerical values to each element in such ranking orders, followed by the use of arithmetic operations to sum the ranks is not permissible. Arithmetic operations (addition, subtraction, multiplication and division) cannot legitimately be used on ordinal data. It is, thus, highly doubtful that we shall ever achieve a unified measure of community welfare. However, there is no reason to suppose that a series of discrete measures of some aspects of social welfare cannot be achieved. Insofar as this can be done, Harland's definition of a social indicator as a partial measure of social welfare is useful.

Harland further defines a social indicator as a *measure of discrepancy* between an existing social condition and a desired goal. He suggests that for each welfare commodity a concrete goal should be specified. Such goals should be operationally defined, that is, a set of agreed upon measurement instructions could be included in the goal specifications. If we can measure the precise status of a welfare commodity and if we can, with the same precision, define a goal, then there isno problem with stating the disparity between the goal and the existing state of affairs. If there is a problem, it is with the process of goal specification itself.

Harland has suggested a number of ways to approach this problem. His solutions, however, do not deal with the complexities of goal specification. One way of setting goals is to encourage experts to stipulate or suggest certain goal objectives. A good example of this comes from the testimony of Wilbur Cohen, a former Secretary of Health, Education and Welfare who appeared before the Senate Committee on the Evaluation and Planning of Social Programs.[8] Cohen made a number of specific recommendations about the setting of social goals which might be made the object of national social policy for the year 1976. His list included a table of twenty-five indicators of current social conditions and the recommended goals. The following is taken from the complete set of recommendations which have reference only to those involving health and well-being.

Cohen offered these measures of present experience and the suggested 1976 goals as illustrative of how social indicators might be used as measures of discrepancy in evaluating social programs.[9]

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[8] Full Opportunity Act, hearings before the Special Subcommittee for Evaluation and Planning of Social Programs of the Committee on Labor and Public Welfare, United States Senate, 91st Congress, 1st and 2nd Sessions, on S.5, to promote the public welfare, July 7, 8, 10, 18 and December 8, 1969; March 13, 1970, Washington: U.S. Government Printing Office, 1970.

[9] Ibid., p. 63.

TABLE 1.1

EXAMPLES OF SOCIAL INDICATORS FOR HEALTH

Indicator	Present Experience	1976 Goal
1. Infant Mortality (per 1,000 live births)	22.1% (1967)	12.6%
2. Maternal Mortality (per 100,000 live births)	28.9% (1967)	15.0%
3. Number of Persons in State Mental Hospitals	426,000 (1967)	50,000
4. Expectancy of Health Life	68.2 years (1966)	70.2 yrs.
5. Handicapped Persons Rehabilitated	208,000 (1968)	600,000
6. Public and Private Expenditures for Health, Education and Welfare as a Percentage of GNP	19.8% (1968)	25.0%
7. Life Expectancy	70.2 years (1966)	72 years

While there are many examples of arbitrary stipulation of social goals, these are not characteristic of the processes for setting social priorities or social objectives in a democratic society. Autocratic or totalitarian societies are, in part, characterized by the stipulation of social and economic goals by the arbitrary whim of a small number of powerful individuals. Goal setting in our society involves paying close attention to processes of social consensus. Such consensus is often embodied in legislation, as for example, the minimum standards which are set for the levels of pollutants in the atmosphere. Consensus in such legislation allegedly reflects the "normative interest" of the body politic.

Elsewhere social indicators have been defined as measures which are related to normative interests. An early definition of the concept from this perspective is contained in Toward a Social Report.

> A social indicator . . . may be defined to be a statistic of direct normative interest which facilitates concise, comprehensive, and balanced judgements about the condition of major aspects of a society. It is in all cases a direct measure of welfare and is subject to the interpretation that, if the change is in the 'right' direction, while other things remain equal, things have gotten better, or people are 'better.' Thus, statistics on the number of doctors and policemen would not be social indicators, whereas figures on health and crime rates could be.[10]

In contrast to Harland's definition of a social indicator as a partial measure of social welfare and more precisely as a measure of disparity between an existing state of affairs and a projected societal goal, the definition above also identifies a social indicator as a measure of disparity. However, in this latter case the measure is a comparison between an existing state of affairs and a socially prescribed norm.

The term norm has both Latin and Greek derivations. In Latin the term "norma" refers to a customary rule or pattern of some kind. In this sense the term in translation means a recognized standard. The Greek "gnorimos" translates as something which is well known and accepted. It is not possible for any society to function very long without a stable system or normative expectations. If there is a fire, the normative expectation is that a call to the fire station will result in immediate response for assistance. When specified hours are set for the presentation of a college lecture in a prescribed course, the normative expectation is that both students and the professor will appear at the precise time and place which have been selected for that occasion. These are examples of norms that function so smoothly that we hardly ever think about them or their properties for ordering social life.

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[10] U. S. Department of Health, Education, and Welfare, Toward A Social Report, Washington, D. C.: U. S. Government Printing Office, January 11, 1969, p. 97.

There are, however, many areas of social life for which the norms are far more ambiguous than the above examples. Indeed, there are some areas of social life in which the norms are not clear at all. For example, what is the normative expectation with respect to a tolerable level of personal safety? How much property theft are we willing to tolerate without becoming unduly agitated? Such limits undoubtedly exist, as witness the social agitation over the issue of law and order in recent years. However, these limits vary with geographic location, historic time and the social and class position of individuals and subgroups in our society. Ideally, most persons would prefer a society in which murder, assault, rape, and robbery would not take place at all. However, most citizens are willing to settle for a reasonable level of crime, a level at which their chances for becoming victims are negligible. It would be almost impossible, however, to get people to agree on an acceptable level of crime. For example, it would be almost impossible to get people to say that five homicides a year per 100,000 population is a tolerable level. That is the level in San Diego and has been since 1960. The city of Atlanta, by way of contrast, has a homicide rate eight times as great. The rate for the United States in 1971 was 8.7 per 100,000.

If we use the press and the other media as sources of indicators of public reaction to current rates of homicide, we would have to come to the conclusion that the current national rates are unacceptable. Yet, it would be impossible to get agreement on what an acceptable level would be.

Defining a social indicator as a discrepancy statistic between an actual state of affairs and an existing norm is not very useful unless some precise statement can be made which identifies the magnitude of the norm. A norm is different from a stated goal with respect to precision of statement. When the Environmental Protection Agency says that oxidants should not exceed levels of 0.1 parts per million of air we have a precise and measurable goal. Most social norms do not have this property. As a consequence those who are involved in the social indicators movement have tended to avoid specifying the level of quantifiable social norms.

Social Indicators as Comparative Statistics

Most current social indicators research avoids the problem of precise norm specification or goal setting. In the absence of clearly stated goals, social indicator measures are presented as comparisons. A present condition is compared with a past condition in the form of a time series. Thus, conditions of overcrowding in housing are usually presented as a comparison between a present level of overcrowding as compared with a past state of overcrowding. The level of overcrowding in 1970 of the U. S. housing stock was lower than in 1960. On the other hand, the crime of auto theft in 1970 was higher than in 1960. Such comparisons, whether done on a decennial basis, annually, or more frequently, can yield statements about whether the condition under investigation has gotten better, has worsened or has remained unchanged. These comparisons over time are often supplemented by comparisons between different regions of the country or between different subgroups in the population. In some cases international comparisons are made. A good example of international comparisons are those which center on mortality rates. The United States experience is regularly compared with other countries on infant mortality and other age-specific longevity rates.

Much of the data presented in this study is based on inter-city comparisons. Thus, characteristics of home ownership are compared across the eight cities. A good example of the use of social indicators in comparing the status of various subgroups within the population comes from a citizen's attitude survey conducted by the Urban Observatory in 1970 in ten United States cities. Among other questions, respondents in all cities were asked how safe they felt walking the streets of their neighborhoods at night. Wide variation was found among communities in response to this question. About three-fourths of all citizens in Albuquerque and in San Diego said that they felt "very safe" or "pretty unsafe" in their neighborhoods. Within each community it was found that females tended to feel less safe than males, older persons less safe than younger persons, and low-income persons less safe than higher-income persons.

In summary, then, a social indicator is a measure of a social condition or some aspect of social welfare bearing on the quality of life of individuals who constitute a defined community. The measure is usually embedded in a time series. It gives information about the present as well as the immediate or long-term past status of the social condition being measured so that the consumers of the information may get a clear picture of whether that condition is improving or getting worse or has remained unchanged.

Among indicators researchers, there are differences of opinion about what should be measured, and there are injunctions to carefully spell out the values and assumptions which underlie the selection of such measures. There is also debate over whether it is possible to weigh, sum and average discrete measures of social welfare and come up with a single meaningful quality of life indicator characterizing an entire society.

What Should Be Measured?

For methodological as well as analytical reasons, Harland proposes that social indicators be developed for several "organizational groupings" of welfare commodities. He proposes indicators in at least twelve areas. Rather refer to these areas as "organizational groupings of welfare commodities," the author of this volume has proposed that reference be made instead to "social domains."[11] Harland has proposed twelve such domains, as follows:

- -culture
- -economics
- -education
- -employment
- -environment
- -health
- -housing
- -legal justice
- -public safety
- -recreation
- -social security
- -transportation

This list is as good as any. It has been derived from the prior work of others who have wrestled with the problem of giving some definition to the major social domains for which social indicators might be developed.[12]

A quick glance at this list of twelve immediately calls to mind a number of as yet, unresolved problems. Societies, of course, are not divided into neat little isolated compartments. There are, no doubt, economic aspects which govern the operation of all social domains. Furthermore, there is no logical reason for divorcing employment from the economic domain or health from the cultural domain or recreation from housing, etc. These are interacting elements in complex social systems. Yet, whether we agree with Harland that the twelve domains he has suggested are too many or too few, there is no denying the advantage, for purely analytical purposes, of regarding each of the domains as if it stood in isolation from the others.

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[11] Meeting on Social Indicators, Urban Observatory, Austin, Texas, October 12-13, 1971.

[12] Bertram M. Gross, Ed., *Social Intelligence for America's Future*, Boston: Allyn and Bacon, 1969; U. S. Department of Health, Education, and Welfare, *Toward a Social Report*, Washington, D.C.: U.S. Government Printing Office, January 11, 1969.

An alternative strategy for generating social indicators has been proposed by Land. He urges that the term "social indicator" be used to refer only to those social statistics that:

> (1) are components in a social system model . . . or are some partial segment or process thereof, (2) can be collected and analyzed at various times and can be accumulated into a time-series, and (3) can be aggregated or disaggregated to levels appropriate to the specifications of the model . . .[13]

The key contribution in this definition is that it insists on collecting statistics which have reference to some "social system model." There is no faulting this suggestion except for the problem of locating an appropriate model which would fully explicate the relationships and the interacting processes which characterize the distinctive social domains which comprise this system. The problem is that social science has not yet reached a level of sophistication which has produced a satisfactory model or theory which is comprehensive enough to explain the complex interactions which occur in social systems.

A symposium, organized in September 1972, at the annual meeting of the American Association for the Advancement of Science, indicates that Land's emphasis is on developing partial social systems models or conceptual frameworks to assist in the definition and construction of appropriate social indicators. "For any partial social condition, social indicators are specified when some conception of the relevant social process is stated."[14] The recording of simple measures such as family income, median school years completed, age specific death rates, etc., present no real problem of measurement other than the technical problems of data collecting. However, the recording of such measures provides no explanation for antecedent features of which they are an end product nor can one assume knowledge of their determinative relationship to subsequent events. Land's insistence on social systems modeling has the potential for providing ". . . explanations of past events or predictions of future events . . . through the verification of hypothesized relationships, which ideally are grounded in such theory."[15]

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[13] Kenneth E. Land, "On a Definition of Social Indicators," The American Sociologist, November, 1971, p. 323.

A central problem in social indicators work is the diversity in conceptual frameworks currently available for presenting empirical data. There are no verified, highly elaborate social systems models which have wide acceptability. The editors of the Social Indicators Newsletter have attempted to resolve the current problem of defining social indicators by proposing a consensus definition. They are, say the editors, ". . . statistical time-series that measure changes in significant aspects of a society." This statement is proposed as a "minimal, realistic definition, . . . in light of the variety of meanings currently imputed to the term." If the strategy for developing indicators work is initially one of communication, then, argue the editors, it would be better to start by "including too much than by excluding too prematurely." While certain aspects of the societies which are measured may not be deemed "significant" by all observers and the "society" may be no larger than the population of a census tract, a social indicator, nevertheless, "expresses something about the composition, social structure, or functioning of that society, and expresses it in quantitative terms that can be compared with similar measures in the past or future."[16] While such a stance may not have much appeal for fastidious social scientists, it does have the advantage of moving ahead with the work of developing useful measures and providing the ingredients for the construction of more sophisticated conceptual models for future use.

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[14] Social Indicators Newsletter, Social Science Research Council, #1, March 1973, p. 4.

[15] Karl H. Flaming, Toward a Social Report for the City of Milwaukee, Milwaukee Urban Observatory, Summer 1972, p. 18.

Plessas and Fein[17] have noted two strategic tendencies at work within the social indicators movement. The first is characterized by its propensity for doing something now--the so-called "inductivist" group which is characterized by a demand for "rigorous analysis and hypothesis testing with proper controls as prerequisites to action."[18]

The Urban Observatory project, despite some efforts to develop a coherent theoretical approach governing the selection of social indicators data, probably shares the sin of "activism." However, it is the author's view that the impact of the Observatory effort will probably have a marked effect in advancing and improving social indicators work and social reporting at the local level. Bauer, one of the early leaders of the social indicators movement takes the position that "rather than do nothing, it is preferable to start out with bad data, warn everyone about the difficulties and limitations, and aim at 'gradual improvement through use'."[19]

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[16] Social Indicators Newsletter, op. cit., p. 1.

[17] Demetrius Plessas and Ricca Fein, "Review Article: An Evaluation of Social Indicators," American Institute of Planners Journal, January 1972, pp. 43-51.

[18] Ibid., p. 43.

Scope of the Present Study

The social domains included in the eight city reports which were summarized in this document were limited in the areas selected for investigation. These are, in order of presentation: income and employment, health, education, public safety, housing, and air pollution.

The decision to limit the reporting to those areas was taken at a joint meeting of project directors held in Austin, Texas, in October 1971. Constraints of time and budget forced limitation of the investigation to a small but relatively important number of social indicators. It was also agreed that it would be best to begin with indicator data which was relatively easy to obtain.

While all cities worked on a minimum number of comparable indicators they were also encouraged to experiment with other types of information and with a variety of models for presenting the data. The broad purposes of the research effort were identified as making available to local governmental officials information relevant for policy formulation, program evaluation and decision-making. The justification for engaging in social indicators research has been widely discussed in the literature. Chapter 2 presents a critical overview of the arguments which have been advanced in support of periodic social reporting on the quality of life.

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[19] Raymond Bauer, Ed., Social Indicators, Cambridge, Massachusetts, (MIT Press), 1969.

The Observatory Cities

The cities selected for comparison in this report were not chosen with any preconceived plan in mind. They happened to be communities which were involved in the Urban Observatory program and which chose to participate in the social indicators study. However, they are sufficiently scattered, geographically, and of sufficiently different size and social composition to provide interesting comparisons. Differences which may be discovered in the indicators areas selected for comparison have the potential of being related to identificable peculiarities of the cities involved and, therefore, provide some possibility for the elaboration of hypotheses which explain some of the observed differences between cities.

The cities range in population from about 150,000 for Kansas City, Kansas, to 717,000 for Milwaukee. The city of Nashville had the lowest population density, with 853 persons per square mile, as compared with Kansas City, Kansas, which, in 1970, had a density of 8,400 persons per square mile.

The size of the central cities as compared with the Standard Metropolitan Statistical areas in which they are located are also highly variable. For example, the population of the city of Nashville constitutes 83% of the SMSA in which it is located. Atlanta, on the other hand, accounts for only 35% of the population in its SMSA area.

With respect to housing stock, those cities with a history of early growth in suburban areas outside the city had relatively few detached single family houses. The housing stock of Albuquerque and the two Kansas cities had almost three-fourths of their housing in single family units, while the remaining cities had closer to 50% single family dwellings. In Milwaukee, for example, only 40% of the housing units were single family and in Atlanta over 30% of the housing was in buildings with five or more units. In Albuquerque, Nashville, and Kansas City, about two-thirds of the housing units were owner-occupied. In the remaining cities, the ratio of owner to renter-occupied was about 50-50.

The racial composition of the cities was quite different. About one-half of the population of Atlanta was Black but less than 10% of those living in San Diego, Denver, and Albuquerque were Black. However, these later cities had the largest concentrations of Spanish speaking or Spanish surnamed populations. The population of Albuquerque had about 25% of Spanish descent, Denver had over 10%.

With respect to education, it was found that over 40% of adults in Albuquerque and San Diego had attended college as compared with less than 25% in Milwaukee and Kansas City, Kansas. Another difference discovered among the cities was the composition of households. In Atlanta almost one-third of households consisted of single individuals and unrelated persons. In Nashville and Albuquerque such households constituted only one-sixth of all households.

Wide variations were found in family income, salary scales and costs of living among the cities. Those cities with the highest proportions of those who earned less than $5,000 were Atlanta and Kansas City, Kansas, and the highest proportion of those cities in which families earning $15,000 or more were in San Diego, Albuquerque and Atlanta. The cities with the lowest percentage of those earning $15,000 or more were Kansas City, Kansas, and Milwaukee. Median income was highest for San Diego and Albuquerque and lowest for Kansas City, Kansas, and Atlanta. Cities with the highest percentage of those with eight years or less of education were Milwaukee and Nashville.

These and other differences tend to correlate with other variations and thus provide an opportunity for discovering significant associations among the social domains under consideration. These associations present the possibility for explaining the relationships discovered. Such possibilities will be discussed in subsequent chapters.

In future inter-city comparisons it would be highly desirable to deliberately select cities for purposes of comparison on the basis of theoretical models which would hypothesize expected relationships deriving from the varying social, economic and cultural differences among communities and which would lead to prediction of anticipated findings. For example, theory has it that crimes of violence tend to be highly correlated with patterns of population density and degree of income disparity. Cities of varying density and of high and low income disparity could be deliberately selected to test the hypothesis of a relationship between these variations and expected levels of violent crime.

Chapter 2

POTENTIAL USES OF QUALITY OF LIFE REPORTS

At least five major reasons have been advanced for employing social indicators to describe the quality of social life. These are:

1. that descriptive reporting on the state of society requires improvement;

2. that more attention, in a rapidly changing society, must be given to the analysis of social trends and social change;

3. that more effective means must be found for assessing the current performance of society;

4. that means must be found for more accurately anticipating alternative social futures; and,

5. that specialized knowledge is needed for societal control.[1]

Descriptive Reporting - The Gap in Social Intelligence

There is agreement among participants in the social indicators movement that an urgent need exists for better descriptive reporting on the state of the society. While there are many examples of the troublesome problem of "information overload," this is overshadowed by what Gross calls the serious "intelligence gap" which exists in the field of social welfare. This intelligence gap, says Gross, has caused "executive officials and members of Congress . . . (to be) misled by inadequate interpretation of bad information based on obsolete concepts and inadequate research collected by underfed and overlobbied statistical agencies." The "intelligence gap" is contrasted with the "credibility gap." Where a credibility gap exists, it is assumed that "various officials are misleading the public by withholding important information. An 'intelligence gap,' however, is rooted in one-sided, missing, distorted, misinterpreted or unused information." As a consequence, the "intelligence gap" leads national policymakers into being "misled--or, to put it more mildly, . . . into over-simplified partial, outdated views of major policy problems."[2]

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[1] Eugene D. Perle, "Editor's Introduction," Urban Affairs Quarterly, Vol. VI, #2, December 1970, p. 137.

The social intelligence gap has at least two aspects. First, there is the sheer lack of information, that is, information which does not yet exist but which could conceivably be obtained and second, the well-advertised fact that existing information is often inadequate for intelligent policy planning.

The paucity of social information. Vast quantities of information are produced annually by all levels of government and by private organizations. The Executive Branch of the Federal government alone has over 4,000 information laden computers available to it.[3] Yet, despite the vast flow of information which inundates the society, there are important aspects of the society about which there is no information. And these happen to be in crucial areas bearing upon the quality of social life.

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[2] Bertram M. Gross and Michael Springer, "Developing Social Intelligence," Bertram M. Gross, Ed., Social Intelligence for America's Future, Boston, Allyn and Bacon, 1969, Chapter I, p. 4.

[3] Washington Post, July 13, 1971. Joseph A. Califano, Jr., a former member of President Johnson's executive staff, wrote the Post article in which he contrasted the kinds of policy input information available to the Executive branch of government as compared with the Congress. The 4,000 computers available in the Executive Branch compares with the three available to Congress. The Congress, as a consequence, is almost wholly dependent upon the Executive branch for "most of its information with an occasional and too often superficial assist from outside experts."

> . . . We have measures of death and illness, but no measures of physical vigor or mental health. We have measures of the level and distribution of income, but no measures of the satisfaction that income brings. We have measures of air and water pollution, but no way to tell whether our environment is unbalanced, becoming uglier or more beautiful. We have some clues about the test performance of children, but no information about their creativity or attitude toward intellectual endeavor. We have often spoken of the condition of Negro Americans, but have not had the data needed to report on Hispanic Americans, American Indians or other minorities.
>
> If the Nation is to be able to do better social reporting in the future . . . it will need a wide variety of information that is not available now. It will need not only statistics on additional aspects of the condition of the nation as a whole, but also information on different groups of Americans. It will need more data on the aged, on youth, and on women as well as on ethnic minorities. It will need information not only on objective conditions, but also on how different groups of Americans perceive the conditions in which they find themselves.[4]

The paucity of vital social information on a national level has its counterpart in the lack of local social data. Most communities do not have the resources required for systematic collection of important social information for purposes of rational policy formulation. Preliminary evidence from the eight-city Urban Observatory effort indicates that the situation on the local level is far more serious than that which exists nationally.

Most communities are heavily dependent for their social information on the limited coverage of the U. S. Census surveys but, often, these do not supply information specific to important national or local concerns. Public welfare programs, for example, are funded jointly by federal, state, and county contributions. One of the great controversies with respect to these programs is the issue of how many able-bodied welfare recipients are available for work. The following exchange which took place between Senator Mondale and Joseph A. Califano, Jr., a Washington attorney, who testified before a Senate Committee, reveals the serious nature of our lack of essential social intelligence with respect to the number of welfare recipients who are eligible for employment:

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[4] U. S. Department of Health, Education and Welfare, Washington, D. C.: Toward a Social Report, U. S. Government Printing Office, January 11, 1969, p. xiv.

> Senator Mondale . . . Somewhere I think I heard that it took a substantial amount of time to develop the facts as to how many are on welfare--who they are. Were you involved in that effort? Could you tell us about it?
>
> Mr. Califano. Mr. Chairman, in late 1965, we were looking at the welfare problem in terms of some kind of income maintenance program or some solution to it. There was a general belief in the government, and very wide belief in the country, as you know, that there were a lot of people on welfare who should be working.
>
> I remember distinctly sitting at the White House on day in a large meeting asking then Secretary Gardner: who was on welfare? He said, 'About seven million or eight million people.' We said, 'Well, who are they? Are they blind or disabled? Are they alcoholics? Are they children?
>
> He said that he would find out the next morning. He just didn't have it on the tip of his tongue. He went back to the Department and found out that no one in HEW knew.
>
> Senator Mondale. How much were we then spending on welfare, approximately?
>
> Mr. Califano. I would say at least $4,000,000,000 annually.
>
> Senator Mondale. And no one knew who was getting the money?
>
> Mr. Califano. No one knew who was getting the money. Initially, it took three or four months to devise a statistically sound sample, which was done by the, then just created, Office of Systems Analysis in HEW.
>
> Then it took over a year to get the study done. Finally, in May of 1967, we knew and we released the figures.
>
> As you will recall, at that time there were 7.3 million people on welfare. We found out, to our amazement, that we were dealing only with about 150,000 fathers, so to speak, adult males in the working level age, and of them about 100,000 were so incapacitated they were beyond the ability to work or be trained.

We were thus dealing with 50,000 males capable of working. We found out that 2.1 million were women over 65, with a median age of 72; 700,000 were either blind or so severely handicapped they couldn't work; 3.5 million were children whose parents were not supporting them, and the remaining one million were the parents of those children, about 900,000 mothers and about 150,000 fathers.

Senator Mondale. How long did it take to get those figures?

Mr. Califano. Roughly from the summer of 1965 to almost the summer of 1967.

Senator Mondale. For the President of the United States to find out who was getting $4,000,000,000 in Federal money took that long?

Mr. Califano. Yes, Mr. Chairman, nobody had ever asked before, certainly not in the terms in which we were asking.

Senator Mondale. Yet these figures are central to the whole welfare structure. I heard the President of the United States recently, and I think he has a lot of good ideas. The key point in his message was that this would be 'workfare,' not welfare, that these people would go to work.

Yet, based on these statistics, a conservative estimate would be that 90% of the people on welfare are not employable. They are children, senior citizens, disabled individuals or they are mothers with large families.

I assume these mythical, able, but unwilling adults purportedly free-loading on welfare is just that, a myth. You have 100,000 at the most.

This shows how a social policy can be predicated on an expectation that is an illusion because we don't know what we are doing.

Mr. Califano. That is right, Mr. Chairman. Those figures have been updated. You are probably familiar with an article by Elizabeth Drew, the distinguished Atlantic Monthly, Washington editor, which indicates that the proportions have not changed. Today we are talking about 80,000 males instead of 50,000 but that is only because of the number of people on welfare has increased . . .[5]

This fascinating exchange between Mr. Califano and Senator Mondale took place in January 1969. With respect to welfare problems the situation has not changed much since then. On January 4, 1973, four years later, Senator Mondale reintroduced a bill, which, in part, authorized the annual publication of a social report on the state of the nation. In presenting the bill he had this to say about the current state of information about welfare reform:

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[5] "Full Opportunity Act," Hearings before the Special Subcommittee on Evaluation and Planning of Social Programs of the Committee on Labor and Public Welfare, United States Senate, Ninety-first Congress, S.5, July 7, 8, 10, 18, and December 18, 1969, and March 13, 1970, Washington: U. S. Government Printing Office, 1970, p. 209-210.

> Another tremendously expensive consequence of our lack of adequate information is that we devise and operate programs based on myth and ignorance . . . it is painfully evident that we lack some of the basic information which we need in order to design a system in which we can all have confidence. Similar problems are presented with respect to urban renewal, mass transportation, air and water pollution, and health delivery systems.[6]

Many other examples of the lack of adequate social information will be given in this paper and many more examples could, of course, be cited by almost anyone engaged in social policy formulation. If the social indicators movement does nothing more than sensitize a wider public to the necessity for doing something about this problem it will have justified its reason for being. A second consideration with respect to the social intelligence gap, is the problem of the inadequacy and unimaginative exploitation of existing data.

Inadequacy of social information. There is probably more social information collected in the United States than in the remainder of the world. Yet, much of the available data are coming under increasing attack by policymakers and social critics because of its inadequate and incomplete character. Crime statistics, collected by the FBI have been faulted for their limited coverage; their failure to take into account the effect of incomplete and sometimes inaccurate police reporting practices, the increase of unreported crimes, the steep rise in the youth

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[6] Congressional Record, 93rd Congress, first session, Washington, Thursday, January 4, 1973, Vol. 119, #2, p. S52.

population as a result of the post World War II baby boom (this segment of the population accounts for a disproportionate percentage of criminal involvements), etc.[7]

While much information is collected about housing, Marcuse has criticized current housing data for relying almost wholly on information about the physical "condition of structures, plumbing facilities, overcrowding, rent, or value."[8] Comprehensive indicator data, says Marcuse, should include

> . . . a definition of the group or groups on whom the measurements are being made; the physical, the service, and the socioeconomic inputs that make up the supply; the individual unit and the collective environmental factors that affect the satisfaction of its occupant; and a clear distinction between the inputs and the outputs of the housing system which treats the physical structure as input (one among many) and the effect on the individual and society as the true output of housing . . .[9]

Marcuse does not suggest that existing input measures be abandoned. He urges that an effort should be made to secure better indicators and that clearer statements of the goals of housing and its outputs should be formulated in the interest of securing an improved social accounting agenda for the nation.[10] Similar criticisms have been made of social statistics currently being gathered in the fields of health[11] and education.[12]

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[7] Albert D. Biderman, "Social Indicators and Goals," in Raymond A. Bauer, Ed., Social Indicators, Cambridge, Mass.: The M.I.T. Press, 1969, pp. 111-129.

[8] Peter Marcuse, "Social Indicators and Housing Policy," Urban Affairs Quarterly, December, 1971, pp. 193-217.

[9] Ibid., p. 194. [10] Ibid., pp. 194-195 and 215-216.

[11] Phillip R. Lee, "Health and Well Being," in Bertram Gross, Social Intelligence for America's Future, Boston: Allyn & Bacon, 1969, pp. 434-452.

[12] Wilbur J. Cohen, "Evaluation and Learning," in Bertram Gross, Social Intelligence for America's Future, Boston: Allyn & Bacon, 1969, pp. 186-219.

One of the salutory side benefits of the social indicators movement is that along with the criticism of the quality of current social information and the methods by which it is gathered, has come a willingness, indeed an eagerness, to suggest alternative methods for measuring societal performance.

Highlighting Social Problems

Miller, in his testimony before a Senate Committee a few years ago, said that the most interesting thing about poverty is that it took so long to discover. The problem of poverty was highlighted by social statisticians who didn't think of themselves as in the "mainstream of economics."

> . . . There were pieces of discussions, but the issue didn't emerge; economists weren't really centrally concerned about it until the sixties. Remember even Robert Lampman's important report for the Joint Economic Committee in the late fifties emphasized the rapid rate of decline of poverty. Galbraith, in 'The Affluent Society,' located the poverty line at the $1,000 income level and therefore decided that poverty was due to personal conditions, case poverty, or to regional poverty. herman Miller and a few economists early in the game began to talk about the inner qualities of the poor. Lampman overlooked an important trend in his data on the distribution of wealth in the United States. He analyzed the long-term downward trend in the concentration of wealth but initially overlooked the upward turn of the inequality which occurred around 1948. It is interesting that when the Council of Economic Advisors began to talk seriously about poverty who had the data? The inadequate data which the Council used in the beginning was rapidly supplanted by whom? By the Social Security Administration's Molly Orshansky, the important poverty analysis had been done not only outside the Council of Economic Advisors, but also outside the Bureau of Labor Statistics and the Census Bureau. It was done by a group which didn't think of itself as in the mainstream of economics--the Social Security Administration's research (arm) which became aware of poverty before the usual economic intelligence agencies.[13]

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[13] "Full Opportunity and Social Accounting Act," Hearings before the subcommittee on Government Research of the Committee on Government Operations, U. S. Senate, 90th Congress, June 26, 1967, S843, Part I, Serial 930843, U. S. Government Printing Office, pp. 110-111.

Now what is true about the origins of the poverty program is also true about other social problems. Miller pointed to the fact that important data on housing subsidies and on housing relocation "were not developed by housing officials but by Alvin Schorr, then of the OEO."

In addition to focusing attention on the paucity and inadequacy of social information and the need to highlight social problems, other reasons have been given for supporting the efforts of the social indicators movement. Among these is the suggestion that social indicators can be employed as "advanced warning systems," of impending social disturbances.

Social Indicators as Advanced Warning Systems

A desirable attribute of a good system of social intelligence is one which has the capability of developing indicator information which can give advance warning of explosive social problems. The Watts riots of 1965 came as a surprise to the nation, but Gross tells us that there was sufficient information prior to the riots to have predicted what ultimately happened. Let Gross speak for himself:

> The first profound serious analysis which was called Patterns of Violence in the Low-Income Areas of Los Angeles was written by a professor of political science who was a colleague at that time of Clark Kerr. It was published in 1947, two months after the Council of Economic Advisors sent its first economic report to the President. Nobody at the Council ever heard about him. We never thought about it. No one ever sent it to us. We were not interested. Since 1947 the Institute of Industrial Relations at UCLA has been keeping current on the subject. In December 1964, I believe it was, nine months before the riots broke loose, they submitted a report which went to Washington--Washington, mind you, that is the point of this story. They submitted a report which went to the Washington office of the Area Redevelopment Administration, laying out in great detail all of the things that the McCone report tried to say or missed after the 24 dead bodies were found.
>
> Now, the report that came to Washington was not duplicated. It wasn't published. It wasn't distributed. Who was going to read it? The Governor of California did not get it until after the bodies had

> been counted and buried and he had to go to a TV station. Then he called over to ask, 'Do we have any studies on this subject?' The Governor said, 'Yes, we have been studying this subject,' and pointed to the report. No one in the State of California--I told you I am making a Republican presentation this afternoon--no one in the State of California who was in any position of responsibility felt that it was his function to serve as eyes and ears, to perform the intelligence function of evaluating what was really going on there, and so I found in Watts where I met with people who were trying to get action on important things, I found there the feeling that you cannot get action without violence. Violence is necessary to wake people up who do not have eyes and ears and will not listen. There is no other way, they seemed to be telling me.
>
> I don't know how we handle the State of California. I don't know how the State of California handles itself. But I might say this goes for some other areas of the country too.[14]

More recently there was the series of nationally advertised prison riots. An adequate social monitoring system would have alerted policymakers to the impending explosions generated by accumulations of grievances and frustrations inherent in our system of penal incarceration. We have now identified this revolt as part of a universal rebellion against the use of traditional incarceration systems for purposes of individual rehabilitation and reform.[15]

The most recent example is from the energy crisis. Three months after the Arab oil embargo the Federal government still had virtually no independent verified information which would permit it to estimate the immediate short-fall of oil and gasoline necessary to maintain a functioning economy. Whatever data was available to government regulatory agencies and to officials came from the oil and gas industry. Hearings before a House subcommittee on the activities of regulatory agencies which began on January 16, 1974, revealed that whatever information was available was taken on faith by the Federal Bureau of Mines, a primary compiler of energy data. David S. Schwartz, Assistant Chief of the Federal Power Commission's Office of Economics told the House Committee that the information which was available was of questionable value. He gave examples of discrepancies of enormous magnitude. For example, estimates of the nation's reserves of natural gas varied between 1.1 trillion cubic feet, a figure derived from private industry sources, to an estimate of 2.1 trillion cubic feet estimated by the United States Geological Survey. Schwartz said that even the Geological Survey estimates could probably be tripled if existing new gas technology breakthroughs were applied. This situation prompted the director of the Bureau of Competition of the Federal Trade Commission to suggest the "creation of a central collection agency, armed with power to obtain, systematize and verify data pertaining to energy . . ." He added that this would "contribute materially to expediting public decisionmaking."[16]

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[14] "Full Opportunity and Social Accounting Act," op. cit., pp. 118-119.

[15] David J. Rothman, "Of Prisons, Asylums and Other Decaying Institutions," Public Interest, November 26, Winter, 1972, pp. 3-17.

In almost every emergency which has occurred, there was some retrospective evidence which gave warning of the impending crisis. An early warning system can be created. Perhaps in the initial development of such a system, there may be situations which will not come to notice. However, many of the crises which have occurred could have been anticipated and measures could have been taken to forestall or temper the ensuing events.

City and county levels of government collect masses of statistics but, in many cases, do not use the data for local policy purposes. Thus, the educational establishment collects data on daily attendance, school dropout rates, school performance scores, etc. But the data are produced for the use of State or Federal agencies.

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[16] Los Angeles Times, January 18, 1974.

Welfare departments collect data for outside agencies so that they can receive matching reimbursement funds for welfare costs. The police collect data for the FBI Uniform Crime Reports. In all too many instances, local agencies neglect to develop time series which could be of use to them or would at least tell them whether things were getting better or worse with respect to certain aspects of social life. Is the community a safer place to live in as measured by the trend in homicides, rapes, robberies, auto thefts, etc.? Is the problem of drug addiction getting worse, better, or are things standing still? What kind of guesses can be made about next year and what implications are there in the data for shaping local social policy? Answers to these and similar questions can and should be available to local policymakers.

While there probably never will be a perfect warning system, much can be done now to exploit information already available for this purpose.

Improving the Quality of Existing Information

Systematic efforts to improve the scope of social information so that it highlights important social problems and provides the basis for developing an advanced warning system will also lead to the improvement of the quality of already existing information. Much of the information gathered by local jurisdictions or governmental groups is either of such poor quality as to be useless or is collected in a form which precludes full utilization for answering important questions.

It is often desirable to correlate several measures of social conditions with each other in order to understand the complex nature of social problems. But the information which is available is often not in a form amenable to statistical comparison and manipulation. In many communities, Welfare Department data is kept by district office boundaries, criminological data is kept by police beats or other arbitrary jurisdictions, mental health data is kept by catchment areas, school data is kept by school district areas and, in many instances, unimportant residual data is kept by census tract. Because of this "mis-mash" of statistical jurisdictions much information of value is lost to administrators and policymakers. A first order of business in improving local information systems is to insist on collecting data in each jurisdiction in a form which is compatible with other jurisdictions.

Linking Economic with Social Analysis

Bertram Gross has charged that the Federal government is dominated by a philosophy of economic philistinism. What he means is that the priorities at the Federal level have favored paying almost exclusive attention to economic rather than social data.

> National economic accounting provides a mechanism for the new Philistinism--the approach to life based on the principles of using monetary units as the common denominator of all that is important in human life. The new Philistinism shows up in different forms: by the cost-benefit analysts who recognize no benefits (or disbenefits) from government programs that cannot be expressed in dollars or cents; by the econometricians still operating on the ludicrous premise that there is, or should be, a 'single-valued, objective welfare function' by which they can judge alternative courses of action; by the effort to debate policies for the 'Greater Society' and the 'quality of life' on the basis of concepts developed decades ago to fight a depression.[17]

Despite Gross' charge of "economic philistinism" one of the admittedly great innovations of the Federal government in our time was the creation of the Council of Economic Advisors and the issuance of an annual Economic Report to the nation. These inventions came about as a result of the Full Employment legislation developed under the Truman administration in 1946. The inclusion of sections in the bill to create these new instrumentalities of government have been described by others as "sleepers" in the legislation. As a consequence of these "sleepers," the science of economics was greatly strengthened and its influence on Federal policy has become ubiquitous.

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[17] Bertram M. Gross, "The Social Interest of the Union," Transaction, November-December, 1965, p. 15.

The movement to foster a parallel development for other domains of the social arena will have equally salutory effects. Senator Mondale and his colleagues have introduced legislation to develop a Council of Social Advisors and the mandating of a Social Report to the nation.

In testimony related to the proposed legislation, two positions have emerged. There has been no quarrel about the need to develop better social data. Differences of opinion have been generated over how best to do this. Senators Mondale, Javits, and their associates feel that the job cannot be done without the new institutions which they advocate. The stance of the Executive Department has been that no new legislation is necessary, since the Office of Budget and Management and other agencies of executive power already have the capacity to develop and publish the social data which has been called for. Others have advocated that the Council of Economic Advisors take on the new tasks as an additional assignment. After four years of debate, it is evident that the Executive Branch of government has not found a reasonable alternative to the proposed legislation and there is now ample evidence that the Council of Economic Advisors is not prepared to take on the new functions and is, indeed, reluctant to do so.

While the issue still remains unresolved at the national level, there is increasing evidence that sufficient interest has been generated in social indicators to safely predict that annual local social reports will become a regular feature of American life.

The movement to develop social indicators now has enough support to have generated the appearance of a number of such reports. The Urban Observatory work which is reviewed in this document is one example of this emerging trend.

Assessing Societal Performance

An additional suggested use of social indicators is in the evaluation of program performance. Many municipal service programs seem to have face validity but their outcomes often prove to have been ineffective. For example, many communities now employ a variety of programs to reduce the level of burglaries, a crime which rose quite precipitously during the past decade. Teams of special service officers in one community visited each home in selected neighborhoods to demonstrate techniques which residents might employ to prevent easy access by thieves. Residents were urged to engrave their drivers license numbers on all highly-valued possessions. They were cautioned to use better locks on doors, to light up darkened areas and to use better security devices for windows. The assumption was that such instruction would reduce the number of burglaries. The evidence is that homeowners may have appreciated the admonitions they were given but did not, in most cases, follow through on the preventive suggestions. We need precise information on how effective such programs actually are. One of the problems with service programs is that the goals are rarely quantified so that evaluation is made difficult.

The introduction of social accounting systems would help to specify the goals of service programs so that their effectiveness can be measured with greater precision than at present.

So far in this chapter, discussion has been restricted to the use of social indicators as instruments of societal assessment. The paucity and inadequacies of social information have been discussed as well as the need to develop social intelligence to highlight emerging social problems and to provide advance warning of potentially disruptive social upheavals. The importance of developing a link between existing economic indicators and indicators focused on social analysis was also discussed. These concerns are related to getting a better "fix" on the past and present state of the society. Springer and others have emphasized the need to evaluate macro-societal performance as well as discrete social programs.

> Social reports are expected, somehow, to provide a normative assessment of (the) array of social accounts--how well our society is achieving a specific set of goals--whether a certain situation is desirable and whether 'progress' is being achieved.[18]

Springer[19] makes a useful distinction between those indicators which assess the state of the society and those which assess the performance of the society.

An example of the use of social indicators as performance measures is taken from the work of Shannon, Ignizio and Gooding.[20] They were asked to develop a set of performance indicators by the Huntsville Model Cities agency. Their strategy was to generate a set of measures which would identify the existing gap between the living conditions of residents in the Model Neighborhood Area as compared with the living conditions for the rest of the population in the city . . . ."[21] The objective of the Model Cities program were stated in quantifiable terms. This then permitted social indicators to be used as measure of progress in achieving program objectives.

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[18] Michael Springer, "Social Indicators, Reports and Accounts: Toward the Management of Society," The Annals, Vol. 388 (March 1970), p. 5.

[19] Ibid., pp. 5-6.

[20] R. E. Shannon, J. P. Ignizio, and E. N. Gooding, "Measuring Progress: Socio-economic Indicators," Research Institute Division of Graduate Programs and Research, University of Alabama in Huntsville, Alabama, May, 1971.

> The amount of improvement can be defined, therefore, by examining the changes in the discrepancy between chosen indicators within the Model Neighborhood Area and levels of those same indicators in the rest of the city. Comparisons between conditions in the Model Neighborhood Area and the rest of the city will also help define what conditions are problems and hence should represent objectives.[22]

Another example of the use of performance measures is from the work of Flax and the Urban Institute of Washington, D. C.[23] Blacks and Whites were compared on a number of quality of life indicators at two points in time--1960 and 1968. For example, Blacks and Whites between the ages of twenty-five and thirty-four were compared on the dimension "percentage completing at least four years of college." Analysis of the data led to a series of performance measures including answers to questions like: Was the non-White rate of improvement greater than the White? (the answer to this question was, yes); Did the size of the White/non-White gap decrease? (the answer to this question was, no); Would the size of the White/non-White gap be smaller in 1976 than 1968? (the answer to this question was, no); Would non-Whites ever reach 1968 White levels?

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[21] Loc. cit., p. 2.   [22] Loc. cit., p. 2.

[23] Michael J. Flax, "Blacks and Whites: an experiment in racial indicators," Washington, D. C.: Urban Institute, 1971.

(the answer to this was, yes). Finally, the approximate year when non-White levels might reach 1968 White levels was given as the year 1987.[24] Performance measures with respect to like questions were computed for sixteen different indicator areas in six different domains (living conditions and health, housing, family, education, employment, and income and poverty.

Future Planning and Societal Control

From time to time some advocates in the social indicators movement have made claims that the development of social indicators technology would enhance the possibilities for long range social planning. As a consequence of efficient long range social planning, tighter societal control over the social allocation of resources would then be possible. While planning for the future is not a new idea, most current planning tends to be limited to short range purposes. The technology available for making long range predictions is still in its infancy. Perle, in commenting on the use of indicators for purposes of forecasting alternative futures says that this cannot be done unless and until there is a clearer understanding of existing systems and their determinants "otherwise, futurism becomes an activity for appointed sages."[25] With respect to the notion of using social knowledge for "societal control" Perle regards this objective as "completely elitist" and frightening. "Who will do the controlling, for what ends, using what means, and who are to be controlled, and why are issues usually avoided."[26]

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[24] Op. cit., p. 10-11. [25] Op. cit., Perle, Eugene D., p. 138.

[26] Ibid., p. 138.

Summary

In summary then, the potential uses of indicators includes the promise of obtaining better descriptive data in order to overcome the current gap in societal intelligence, to upgrade the quality of existing data, to develop early warning systems about serious emergent problems, to improve the evaluation of existing service programs and to do a better job of planning for the future.

Norton Long, a professor of political science, described the local social system, or as he called it the "territorial system," as a collectivity of games. Thus, there is the newspaper game, the politicians' game, the public administration game, the ecclesiastical game, and so on. Each of these games has its own set of goals and its set of playing rules. Its players are designated by title and each has his assigned performance roles. Each game has its own audiences. There are elite as well as general spectators and both the players and the audiences know how to keep score.[27]

Just as there are expert scorekeepers who monitor games like baseball and football, so does each social domain have its specialized scorekeepers. Elite players in the educational game keep careful count on the number of children who register in school, the costs per pupil, the number of school dropouts, the experience level of teachers, etc. Similarly, scorekeepers in welfare departments count the number of clients served each month by category, the per capita expenditure for different aid programs, the number of children living in foster homes, etc.

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[27] Norton Long, "The Local Community as an Ecology of Games," American Journal of Sociology, Vol. 64, November, 1959, pp. 251-261.

Most of the scorekeeping that goes on in our society tends to be confined to specific institutions. The tallies made by institutional scorekeepers tend to be of interest only to those who play the unique games and to their audiences. There are few, if any, "territorial scorekeepers," that is persons who keep score of many games as they are played simultaneously. One of the objectives of the social indicators movement is to develop comprehensive social reports reflecting the complexity and the interrelatedness of many singular institutional games. It is becoming increasingly clear that the outcome of these unitary games affect activities and goals of individuals and collectivities engaged in other games.

The social indicators and social reporting movement may be conceptualized as an attempt to develop an effective system of territorial scorekeeping while, at the same time, improving the quality of scorekeeping--all for the purpose of improving the quality of social life.

It is very difficult to anticipate the ultimate utilities of this effort and its impact on public social policy. Those working on social indicators tend to be optimistic about their potential for usefulness in social planning.

The author agrees, with Eleanor Sheldon that the social indicators movement can, at the very least, contribute to the improvement of descriptive reporting, to the analysis of societal change, and to the prediction of otherwise unanticipated social events.

The six chapters which follow summarize an initial attempt to develop local social reports in eight American cities. The reports were limited in their coverage but the areas which were selected will probably find a place in future quality of life studies done at the local level. The indicators selected for each of six social domains were limited in number and may not be the best indices which might have been selected.

Nevertheless, this comparative research effort has the virtue of being first of its kind and can serve as a model leading to elaboration of more sophisticated types of reporting in the future.

To provide a general background, the first and second chapters provide data on selected comparative income and employment characteristics of the eight cities studied.

Chapter 3

INCOME SHARES AND THE QUALITY OF LIFE

A recent review of the literature on the relationship between individual happiness and personal income showed that "in all societies, more money for the individual typically means more individual happiness." The review involved analysis of data from over thirty surveys conducted in nineteen countries. Included were findings from three Communist nations (Poland, Yugoslavia, and Cuba) and eleven countries in Asia, Africa, and Latin America. In all cases, "the association between greater individual happiness and more money appears without exception in widely different countries and social systems--in non-Western as well as Western society, poor as well as rich countries, Communist as well as non-Communist nations." While happiness was also discovered to be related to marital status, age, and education the influence of income seemed to have "the strongest and most consistent association with happiness."[1]

Unhappy people were found among the rich and happy people were found among the poor. But, on the average, those with higher income were found to be happier than those who were poor. "For example, in a December 1970 survey of the American population, not much more than one-fourth of those in the lowest income group (under $3,000 annual family income) reported that they were 'very happy'." In the highest income bracket identified in the survey (family income over $15,000) the proportion who said they were "very happy" was almost twice as great. In successive income groups from low to high, the proportion (who said they were very happy) rose steadily. For the typical individual, it would seem more money brings with it more happiness."[2]

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[1] Richard A. Easterlin, "Does Money Buy Happiness?," The Public Interest, #30, Winter 1973, pp. 3-10.

Since income plays such a decisive role in determining subjective feelings of happiness what is the situation with respect to income distribution in the United States?

A recent study completed by Peter Henle, a Library of Congress labor specialist, showed that the "bottom and top fifths of American families had about the same shares of total family income in 1970 as they did in 1947; 6% versus 42%. The three-fifths in the middle brackets received about the same share of income throughout the period; 52%."[3]

A number of reasons have been advanced to explain the income disparities which exist in our society and the inferior economic status of that strata located at the lowest end of the income spectrum. Henle was cited as giving two reasons; the large number of young persons who have been seeking employment and who "act as a drag on the lower end of the job market" and the large influx of women and part-time workers who work for low pay. "In other words, employers have found so many people available to be hired for relatively little money that they have not gone all out to upgrade jobs and salaries."[4]

Joseph Pechman of the Brookings Institution has identified another reason for the disadvantaged position of the lowest income quintile in the population. The top 1% of taxpayers have managed to pay only 26% of their income in taxes "even though the nominal federal rates on their income brackets ranged up to 70%." In contrast, those in the lower income brackets have seen their rates continously increase as a result of regressive taxation, mainly sales taxes and payroll and social security taxes.[5]

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[2] Ibid., pp. 5-6.

[3] Time Magazine, January 15, 1973, p. 69.

[4] Ibid., p. 69.

While the incomes of all classes of the population have risen over the past two decades, the gap between high and low income families has remained constant. Many of our social problems are attributable to the strong feelings of "relative deprivation" as well as real deprivation experienced by those in the lowest income brackets.

Proposals for income redistribution, the latest of which was embodied in the Family Assistance Plan proposed by the Nixon administration, have been strongly rebuffed. Those holding conservative political views were opposed to the concept of providing subsidies to welfare clients and the working poor on ideological grounds. Those of more liberal political persuasion did not feel that the level of income distribution proposed by the administration was adequate enough to support a health and decency standard of living at a minimum level. Time magazine in a news story entitled "The Unshrinking (Income) Gap" noted that President had "quietly withdrawn his support of the plan (Family Assistance)" and that the most "realistic hope of the poor probably lies in continuation of the strong economic advance that John Kennedy once compared to a rising tide that 'lifts all the boats'."[6]

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[5] Ibid., p. 69.

[6] Ibid., p. 69.

Income Shares in the Eight Cities

Given the importance of income as an indicator for measuring the quality of life, what was the situation with respect to the eight cities surveyed in this report? Census data is available on median family income, the income of unrelated individuals, the percentage of the population who lived in poverty in 1969 and the income shares going to various segments of the population. Table 3.1 gives information on the percentage of income shares which go to four stratified income groups as well as the median income in dollars for each of the eight cities.

Family income was lowest for Atlanta with a median of $8,399. Milwaukee was highest with median family income of $10,262. In 1969, median income for all families in the United States was $9,433.[7] Thus, the median family in Atlanta was about 19% less than the median for all United States families. Median income in Milwaukee was, on the average, about 9% greater than for families nationwide.

On the average, about 19% of families in all eight cities earned less than $5,000 per year. By way of contrast, Milwaukee had only 16.3% of its families with median incomes of less than $5,000. Milwaukee had the lowest percentage of low income families and Atlanta had the highest percentage of such families among the eight cities which were studied.

Table 3.1 also gives information on families with incomes of $15,000 or more. Almost one-fourth (24.4%) of San Diego families had incomes of $15,000 or more. Among the eight cities, it had the highest proportion of such families. Kansas City, Kansas, was lowest with only 13.8% of families earning that much or more. In the remaining cities approximately 20% of families, on the average, had incomes of $15,000 or more.

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[7] U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1971, Table #500, p. 316.

TABLE 3.1

PERCENT TOTAL FAMILY INCOME
(1969)

Income	Albuquerque	Atlanta	Denver	Kansas City Kansas	Kansas City Missouri	Milwaukee	Nashville	San Diego
Less than $5,000	19.9%	26.7%	19.0%	19.4%	17.7%	16.3%	19.3%	18.4%
$5,000 - $9,999	32.3	33.5	33.2	37.6	33.0	31.7	34.5	30.6
$10,000 - $14,999	25.2	21.0	26.3	29.2	29.2	32.9	27.1	26.6
$15,000 or more	22.5	18.9	21.4	13.8	20.2	19.2	19.1	24.4
Total	99.9%	100.1%	99.9%	100.0%	100.1%	100.1%	100.1%	100.0%
Number of Families	60,995	119,326	127,326	43,420	126,127	176,919	113,176	164,174
Median Family Income (In Dollars)	$9,641	$8,399	$9,654	$9,165	$9,300	$10,262	$9,473	$10,166

Source: U. S. Census, 1970.

An explanation for the low median income for families residing in Atlanta and the high share of such families with incomes of $5,000 or less is that Atlanta has a very high percentage of Black families. In 1969 median family income for White families in the United States was $9,794. Median income for Blacks and others was $6,191. This latter group received only 63.2% of White family income. Blacks and others in the city of Atlanta in 1969 constituted about 50% of the population. Since Black family income in Atlanta was significantly lower than family income for Whites, the low median figure for all families is not surprising.

Income and Poverty

According to the latest census, there were 24.3 million Americans who lived in poverty during calendar year 1969. These were persons whose income fell below the federal government's official index of poverty. The poverty index adopted in 1969 by the Federal Interagency Committee "provides a range of income cut-offs or 'poverty thresholds' adjusted to take into account such factors as family size, sex, and age of the family head, the number of children, and farm-nonfarm residence. The poverty cut-offs for farm families have been set at 85% of the nonfarm levels. These income cut-offs are updated every year to reflect the changes in the Consumer Price Index. The poverty threshold for a nonfarm family of four was $3,743 in 1969.[8]

The 24.3 million poor counted in the 1970 census represented one out of every eight Americans, one out of every six children under the age of six and one out of every four among the old. While these numbers are large, the Census Bureau reported that there were one-third fewer such persons in 1969 than there were in 1959. At the end of the 1950s, there were 39.5 million poor people in the country, 15.2 million more than were counted in 1969 when the number of all poor persons was 24.3 million.[9]

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[8] The U.S. Department of Commerce, Bureau of the Census, Census Tract San Diego, California, PHC(1)-188, Appendix B, p. 8.

In 1959, 22.4% of all persons residing in the United States were poor. By 1969 only 12.2% of the population were counted as poor.[10]

Table 3.2 gives information on the poverty status of families and of all persons (unattached individuals as well as those living in family units) in the eight-city study.

Atlanta, which had the lowest median family income, also had the highest percentage of families living at or below the poverty level (15.9%) and the highest percentage of all persons living in poverty (19.8%). Milwaukee which had the highest median family income also had the lowest percentage of families living at or below the poverty line (8.1%) and the lowest percentage of all persons living at or below the poverty level (11.4%). These inverse relationships between poverty and income are only true for the extremes in the distribution. They do not follow a similar pattern for the remaining cities. For example, Albuquerque, which had the second highest poverty level among the eight cities was fifth highest in median family income. Kansas City, Missouri, on the other hand, which had a relatively low proportion of families in poverty (8.9%) was a second lowest in median family income.

In the case of Albuquerque the high percentage of families and individuals living in poverty may be accounted for by the large percentage of poor Hispanic Americans and Indians living there. Where there are reversals as in Albuquerque and Kansas City, Missouri, it tends to show up or highlight idiosyncratic patterns of the population mix or anomalous income patterns.

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[9] Op. cit., Statistical Abstract of the United States, 1971, Table #513, p. 322.

[10] Ibid., p. 322.

TABLE 3.2

POVERTY DATA
1969

	% of Families Below Poverty	Rank	% of All Persons in Poverty	Rank
UNITED STATES	9.8		12.2	
Albuquerque	13.0	7	14.2	7
Atlanta	15.9	8	19.8	8
Denver	9.4	4	13.8	5
Kansas City, Mo.	8.9	2	12.5	3
Kansas City, Ka.	10.0	5	13.9	6
Milwaukee	8.1	1	11.4	1
Nashville	10.4	6	13.7	4
San Diego	9.3	3	12.0	2

Source: U. S. Census, 1970

Of the eight cities, Milwaukee, San Diego, and Denver, in that order had the lowest percentages of family poverty--lower than the national average.

Poverty and the Minority Populations

Table 3.3 gives information on the number and percentage of families and all persons, of the Black and Spanish language and surname minorities who had incomes at or below the poverty level in 1969. At the time of the last census, 6.7 million Blacks living in families had low incomes, constituting 29.9% of all such families. When all Blacks in the United States who had incomes at or below the poverty line are counted they constituted 31.1% of the total Black population.

Among the eight cities, Albuquerque had the largest percentage of Black families and individuals with low incomes. However, the total number of Blacks in Albuquerque was small when compared with other communities. San Diego, Kansas City, Missouri, and Denver had the smallest percentage of Black families and individuals with incomes at or below the poverty level. One-fourth of all Black families in Atlanta, the city with the largest proportion of Blacks, lived in poverty and 28.4% of all Blacks in that city were poor.

Among the eight cities there was no Black population which has as high a percentage of poor families as in the United States as a whole (29.9%). Only Albuquerque and Nashville had a larger proportion of all Blacks living in poverty as compared to the average for the United States. The nationwide average was 31.1%, for Albuquerque it was 35.1%, and for Nashville, 33%.

Spanish language or surname families and individuals were relatively less poor than Blacks, except for those living in Denver. The proportion of Spanish language or surname families living in poverty ranged between 4.0% in Nashville (which had a negligible number of such families) to 21.2% in Denver. Only Albuquerque, Denver, and San Diego had substantial numbers of such families. For those cities the highest proportion of poor Spanish surnamed families lived in Denver (21.2%), Albuquerque was second with 21.1% and San Diego had the lowest proportion of Hispanic poor--14.7%.

TABLE 3.3

NUMBER AND PERCENT OF FAMILIES AND ALL PERSONS BELOW POVERTY BLACK AND SPANISH LANGUAGE OR SURNAME - 1969

	Black		Spanish Language or Surname	
	Percent Families Below Poverty	Percent All Persons Below Poverty	Percent Families Below Poverty	Percent All Persons Below Poverty
U. S.*				
Number (in millions)	6.7	7.6	NA	NA
Percent	29.9	31.1	NA	NA
Albuquerque				
Number	333	1,902	3,913	19,591
Percent	27.6	35.1	20.1	23.2
Atlanta				
Number	16,043	72,313	123	529
Percent	25.1	28.4	10.6	10.4
Denver				
Number	2,283	11,848	4,105	20,767
Percent	20.7	25.4	21.2	24.3
Kansas City, Mo.				
Number	5,012	28,077	350	1,754
Percent	20.5	25.1	12.3	13.0
Kansas City, Kansas				
Number	1,991	10,425	105	636
Percent	25.0	30.7	8.6	7.5
Milwaukee				
Number	5,576	28,486	448	2,530
Percent	24.9	27.4	12.9	15.6
Nashville				
Number	5,230	27,162	26	134
Percent	27.8	33.0	4.0	4.8
San Diego				
Number	2,260	11,477	2,862	14,230
Percent	20.3	23.2	14.7	16.8

* For U. S., "Negro and Other Races"

Sources: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States 1971, 92d Annual Edition, Washington, D. C.: Government Printing Office, July 1971, p. 322, Table #513.

With respect to the proportion of all Hispanic persons who were poor, the percentage ranged from 4.8% in Nashville to 24.3% in Denver. Of the three cities with large Spanish language or surname populations, Denver had the largest percentage of poor--24.3%; Albuquerque was second with 22.2% and San Diego was lowest with 16.8%.

Income and Other Aspects of Social Life

Individual and family income, in addition to being positively related to subjective feelings of happiness, has important ramifications with respect to the quality of life in other social domains. Family income is inversely related to mortality rates. On the average, persons from low income backgrounds do not live as long as those who come from more affluent surroundings. This is true for all age groups in the population and is clearly evident in the data on infant mortality. Low income persons are also less healthy than those with higher incomes. These relationships, as well as others, are explored in Chapter 5 on health indicators.

The well established linear relationship between high levels of education and high income is explored in Chapter 6. Both high levels of education and high levels of income determine patterns of residency. In addition to segregation by race, some of the data collected clearly shows that in urban areas segregation by income and education may be almost as pronounced as residential segregation by race, although the two are often related.

The relationship between income and crime is somewhat more complex. There is ample evidence available that poverty is not a direct cause of crime. Crime, in the United States, in recent years has increased with affluence and the reduction of poverty. There was more crime in the

United States, of all kinds, in 1970 as compared with 1960, despite the fact that the number of persons in poverty declined by almost 40% during that period. However, in a recent study done by the Council on Municipal Performance, correlations between the degree of income disparity in a community and its level of crime was demonstrated.[11] The thirty largest American cities were ranked on the so-called Gini index, a measure of income disparity. The higher the Gini index, the greater the distance between those with high incomes and those with low incomes. For the United States, the lowest fifth of the population, on the average, has an annual aggregate income approximately eight times less than the top 20%. This spread varies from community to community. The CMP study shows that the greater the spread the higher the robbery rates. Apparently, it is not the absolute level of poverty which accounts for high levels of crime but the degree of "relative deprivation" which persons at the bottom feel in relation to those at the top. In Milwaukee, for example, which has a low Gini score, that is, the income spread is within relatively narrow limits, the robbery rate tends to be low. Atlanta, where the income disparity is great and where the Gini score is high, also tends to have a high robbery rate.

The CMP study also found a high correlation between the percentage of families who earn $15,000 or more a year and the level of crime. The higher the proportion of such families in a community, the higher the crime rate. While these findings are not conclusive since crime data are based only on cases known to the police they are provocative enough to warrant further investigation. If similar correlations can be found using self-reported crime statistics, it may have very important implications for local social policy. For example, one might anticipate on the basis of the findings that income transfers to low income groups, transfers such as those which will occur in the South as a result of the federalization of adult welfare programs and which will yield substantially higher incomes to disadvantaged persons, would have the effect of reducing the crime rate since the income disparity between the lowest income and the highest income groups will have been narrowed. It also has implications in terms of municipal policy related to economic development. Communities which pursue expansion of tourism as a way of generating more income may be forced to explore the consequences of such a policy insofar as the tourist industry also requires a large reservoir of labor which is often low paid or only seasonally employed. Such communities may wish to weigh the advantages and disadvantages of such a policy insofar as it leads to an increase or a reduction in community income disparity.

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[11] Municipal Performance Report, Council on Municipal Performance, Vol. 1, No. 1, New York, New York, May-June, 1973.

In surveys done on the subjective feelings of happiness, frequent mention was made of familial congeniality and stability as a determinant of happiness. Money apparently buys family stability. A Bureau of the Census survey done in 1971 found that for households whose heads are from thirty-five to fifty years old, higher income and more schooling were associated with greater family stability. Among families earning under $5,000 a year only 71.7% of the marital partners had been married just once. "This first-marriage figure rises steadily with income level, and for families earning $15,000 or more, fully 83.0% of husbands and wives were found to be in their first marriage."[12] The relationship between education and marital stability is even more pronounced. Where both parents had less than a high school education, only 75% were in their first marriage. Where both parents were college students, the figure stood at 90.4%. "These figures emerged despite the better access which the relatively well-off presumably enjoy to information, services, and money necessary for divorce."[13] The author concludes that "it would seem that money and education are capable of buying marital happiness as well as, if not actual happiness, then at least a degree of marital stability."[14]

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[12] The Public Interest #30, Winter 1973, p. 135.

Income is undoubtedly related to almost every other social domain. The relationships which have been cited are indicative of the importance of income as a quality of life measure.

Measures of Income, Poverty and Welfare

Unfortunately data on individual and family income at the community level are only available from the decennial census. It might be worthwhile for communities to consider conducting a sample survey to obtain census and other data at an interval midway between the national census periods. This would enable communities to more closely monitor significant trends in a rapidly changing social order. In the absence of such census data only partial information on the income status of the most deprived socio-economic groups may be all that is available at the local level.

The welfare population. Only San Diego and Kansas City sought to exploit welfare information in its local reports. In both communities it was the county welfare departments which kept regular data on the number of persons receiving various categories of welfare assistance.

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[13] Ibid., p. 135. [14] Ibid., p. 135.

Since the San Diego County Welfare Department had computerized its welfare information, it was possible to obtain data for each of the political jurisdictions in the county, including the City of San Diego and its designated neighborhood areas. In that community, it was possible to pinpoint the geographic areas in which the highest and lowest percentages of welfare recipients were located and to initiate a series which in subsequent years will enable administrators to detect shifts in the geographic location of the welfare population as well as shifts in the volume and percentage of welfare recipients. This will also make it possible to plan the location of required social services and health delivery systems where they are most needed. It will also be possible, on the basis of welfare statistics, to make informed guesses about the total number of persons in the community who may be living in poverty. National data on welfare assistance indicates that for every person on welfare there is at least one other person who is legally poor and not on welfare. Thus, in 1970, approximately 6% of the population was on welfare in the City of San Diego. The percentage of poor counted in the 1970 census was 12%. This two-to-one ratio may not obtain for every community. By using the 1970 census data and computing the percentage of those receiving welfare payments, the total number of poor persons living in a community, can be closely approximated.

Income and Employment

How people earn their living, the relative proportions of eligible persons who are actively participating in the labor force, the ratio of male and female labor force participants, the kinds of work people do, their educational preparation and the relative unemployment levels which obtain in different communities have an influence in determining the general level of prosperity of communities and consequently the median family and individual income shares which are available to its members. Chapter 4 gives information on labor force and employment characteristics for the eight cities.

Chapter 4

LABOR FORCE AND EMPLOYMENT CHARACTERISTICS IN THE EIGHT CITIES

Labor Force Size and Participation Rates

In 1960 there were 69,628,000 persons in the civilian labor force in the United States. By 1970 labor force participants numbered 82,715,000. However, Table 4.1 shows that while the labor force had increased by almost 13,000,000 persons, the percentage of those in the labor force remained relatively constant. In 1960 59.2% of all those eligible for labor force participation were in the labor force. By 1970 this proportion rose only slightly to 60.3%.[1] However, when these percentages were disaggregated by sex the table shows that male rates of labor force participation declined while female rates increased. The White male participation rates decreased from 82.6% to 79.7% in the ten-year interval while White female participation increased from 36% in 1960 to

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[1] Census data for 1960 and 1970 are not entirely comparable. In 1960 the labor force was defined to include all adult males fourteen years of age and over. In 1970 the adult labor force was limited to those sixteen years of age and over. As a consequence the rise in labor force participants is somewhat greater than the 1960-70 comparative data indicates. Also, in 1960 Blacks in the labor force were counted together with persons of Oriental descent and with American Indians under the general rubric - "Non-White." In 1970 Blacks were counted separately. Thus, Blacks emerged as a relatively smaller group in 1970 as compared to 1960. However, since Blacks constitute 80% or more of the non-White population a rough comparison with 1960 is possible. Thus. caution should be observed in comparing data which concerns labor force size for the two census periods. The difference in definition of "non-White" and "Negro Population" should also be taken into account in making census comparisons.

42% in 1970. Male participants in the "Negro and other" category declined from 80.1% in 1960 to 74.7% in 1970, while "Negro and other" female participants increased from 47.2% to 48.9%.

Male rates declined for all age groups except for those sixteen and seventeen years of age where a slight increase (less than 1%), occurred during the ten-year interval. The largest decrease among males was for those sixty-five years of age and over. In 1960, 32.2% of those sixty-five and over were labor force participants. By 1970, only 25.8% were participants. Female rates of participation, on the other hand, increased for all age groups, except for those sixty-five years and over. The largest increase was for females between twenty and twenty-four years of age inclusive. For that group, in 1960, labor force participation was 46.1%. By 1970 the participation rate rose to 57.5%, the largest percentage increase for any of the female age groups listed.

Females tend to retire from the labor force at a faster rate than males once they reach the age of fifty-five. In absolute numbers there were about twice as many males who were sixty-five years of age and over in the labor force in 1970 as compared with females. In 1970, 2,164,000 males, age sixty-five and over were still in the labor force as compared with 1,056,000 females in the same age group.[2]

In summary, there was no significant increase in the rate of labor force participation during the decade of the 1960s. About 60% of all those eligible to participate were in the labor force in both 1960 and 1970. However, there were some marked changes in the internal composition of the labor force. The percentage of male participation decreased and the level of female participation increased rather markedly. Male participation rates declined in all age groups except for those sixteen and seventeen years old. The largest increase in female participation rates was in the twenty to twenty-four age group. Females retire from the labor force sooner than males after age fifty-five. Of those sixty-five years of age and over there were twice as many males employed as compared with females.

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[2] Ibid.

TABLE 4.1

UNITED STATES LABOR FORCE PARTICIPATION RATES, 1960-1970
BY RACE, SEX AND AGE

	1960	1970
Total	59.2	60.3
White	58.8	60.2
Male	82.6	79.7
Female	36.0	42.0
Negro and Other	63.0	61.1
Male	80.1	74.7
Female	47.2	48.9
Male	82.4	79.2
16-19 years	58.6	57.5
16 and 17 years	45.9	46.7
18 and 19 years	73.1	68.8
20-24 years	88.9	85.1
25-34 years	96.4	95.0
35-44 years	96.4	95.7
45-54 years	94.3	92.9
55-64 years	85.2	81.5
65 years and over	32.2	25.8
Female	37.1	42.8
16-19 years	39.1	43.7
16 and 17 years	28.6	34.6
18 and 19 years	51.0	53.4
20-24 years	46.1	57.5
25-34 years	35.8	44.8
35-44 years	43.1	50.9
45-54 years	49.3	54.0
55-64 years	36.7	42.5
65 years and over	10.5	9.2

SOURCE: Department of Labor, Bureau of Labor Statistics, Special Labor Force Report No. 119, Labor Force Projections to 1985.

The Observatory cities. Table 4.2 gives the number and percent of civilian labor force participants in the eight Observatory cities. It will be recalled from Table 4.1 that for the United States, approximately 60% of persons eligible for participation in the civilian labor force were in the labor force. On the average, most of the cities in this study had participation rates in 1970 which were typical of those for the country as a whole. The highest rate of participation for that year was in Kansas City, Missouri. with 62.2% of eligibles in the labor force. The lowest rate of participation was for San Diego with 48.1% of eligibles in the labor force. All cities showed an increase in labor force participation rates between 1960 and 1970.

The relatively low participation rate in San Diego is mainly attributable to the large number of males in the armed forces who reside in San Diego. The resulting inflation of the male population of labor force age yields a lower percentage of civilian labor force participants. When the estimated 100,000 military personnel were subtracted from the total of those of labor force age, the percent of those in the civilian labor force was approximately the same as for other cities--about 60%. There are also a number of additional demographic factors which may have contributed to the disparity. San Diego has a relatively small Black population. Black females tend to participate in the labor force at a higher rate than White females so that cities with small Black populations will tend to have lower overall rates of participation. Similarly, it has been found that rates of female participation among Spanish speaking or Spanish surnamed populations tend to be smaller than Anglo or Black populations. About 8% of San Diego's population is Spanish speaking or Spanish surnamed. The low rates of labor force participation among females from this ethnic group would also tend to lower the overall rate of participation. In addition, female labor force participation tends to decrease as family income rises. San Diego has a larger percentage of high income families than the cities with which it was compared. Females from upper income families are less likely to participate in the labor force than those from moderate or low income families. This factor would also tend to result in a diminution in the overall rate of labor force participation.

Female Participation in the Labor Force

In the twenty years between 1950 and 1970, ten million additional women entered the labor force. Over thirty million are now gainfully employed.

By 1971 about one-half of all women between the ages of thirty-five and fifty-five were gainfully employed. Whether or not a woman works depends on the husband's income. In homes where husbands earned $5,000 a year or less, about 35% of women worked whether they had children or not. The proportion of female employment declines as the husband's income rises. Thus, in those homes where the husband earned $10,000 a year or more, the proportion of women who worked was only 20%. Female employment was also related to education. Among women who had gone no further than elementary school, fewer than 30% had jobs. For those with college degrees, the ratio was 55% and for those who had post-graduate education the ratio was 70%. The higher the level of education, the more likely were women to seek and find work. Both the rising cost of living and the availability of jobs were influential factors in drawing females into the labor market.

TABLE 4.2

NUMBER AND PERCENT OF CIVILIAN LABOR FORCE PARTICIPANTS OF LABOR FORCE AGE 1960-1970

	Number of Persons of Labor Force Age*				Percent in Civilian Labor Force	
	1960 (14 yrs or older)	Civilian Work Force	1970 (16 yrs or older	Civilian Work Force	1960	1970
Albuquerque	131,785	74,367	163,585	94,640	56.6	57.9
Atlanta	352,819	206,525	353,660	217,791	58.5	61.6
Denver	358,106	203,821	374,991	221,827	56.9	59.2
Kansas City, Mo.	352,017	208,543	357,580	222,241	59.2	62.2
Kansas City, Ks.	87,373	50,307	115,209	69,662	57.6	60.5
Milwaukee	533,031	316,862	506,153	313,174	59.4	61.9
Nashville - Davidson Co.	284,478	159,014	316,949	189,793	55.9	59.9
San Diego	419,161	193,723	507,631	244,347	46.2	48.1

SOURCES: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1960 and 1970.

In the eight cities the proportion of employed males in the civilian labor force exceeded that of female employees for both the years 1960 and 1970. Table 4.3 also shows that the proportion of employed males declined in every city between 1960 and 1970.

When 1960 and 1970 census data were compared, the proportion of females in the civilian labor force showed an increase in every city during the ten-year period. In 1970, Atlanta had the highest proportion of eligible females participating in labor force--45.3%, and Albuquerque had the lowest proportion--39.5%. Atlanta was the only city in which the proportion of females in the civilian labor force exceeded the proportion of female participants in the United States labor force. The largest percentage gain in female participation was in Milwaukee where the increase was from 35.1% in 1960 to 41.7% in 1970.

Race and Employment

Labor force participation rates by Blacks, showed an increase in 1970 over 1960 for each of the eight cities except Albuquerque where the participation rate dropped from 61.3% in 1960 to 55.8% in 1970. The highest participation rate by Blacks was in Denver where 65.2% of those of labor force age were in the labor force. The lowest rate was in the city of Albuquerque. Table 4.4 indicates that on the average about 60% of Blacks of labor force age participated in the labor force.

The figures for those of Spanish language or Spanish surname were similar to those for Blacks. The highest rate of participation in 1970 was in the city of Nashville where 66.6% of those of Spanish language or surname were in the labor force. However, the number of such persons was small (1,807). The lowest rate of participation was in San Diego with only 56.2% of eligibles participating in the labor force. The three cities with the largest numbers of Spanish language and surname persons of labor force age were Albuquerque, Denver, and San Diego, with labor force populations of 51,105, 50,150, and 50,102. The percentages of eligible participants in the three cities were 57.1% for Albuquerque, 58.1% for Denver, and 56.2% for San Diego. Table 4.5 shows that information on Hispanic Americans for most of the cities was not available for 1960 except for those with the largest Spanish language and surname populations, namely Albuquerque, Denver, and San Diego. In all three cases the rates of participation increased in the decade between 1960 and 1970. The increases were modest. In Albuquerque the percentage point increase was 2.7, in Denver 3.5, and in San Diego 1.7.

Occupational Characteristics of the Employed Population

Table 4.6 gives information on the occupational characteristics of the civilian labor force in the eight cities. A dramatic shift took place in the types of employment in which individuals were engaged when the census of 1960 was compared with the census of 1970. In all eight cities, there was a substantial rise in the percentage of persons employed in professional and technical occupations. Each city without exception, participated in the expansion of jobs in this sector of the economy. In 1960 the percentage of persons employed as professional and technical persons varied between 9.9% of the total civilian labor force in Kansas City, Kansas, to 19.3% in Albuquerque. By 1970 the variation was at higher levels, ranging from 11.4% in Kansas City, Kansas, to a high of 24.4% in Albuquerque. The three cities with the highest proportion of professional and technical workers were Albuquerque with 24.4%, San Diego with 20.7% and Denver with 18.4%. The cities with the lowest proportion of such workers were Kansas City, Kansas--11.4%, and Milwaukee--12.5%.

TABLE 4.3

CIVILIAN LABOR FORCE PARTICIPATION BY SEX 1960-1970

City	Number in Civilian Labor Force		Percent Male		Percent Female	
	1960	1970	1960	1970	1960	1970
Albuquerque	74,637	94,640	65.7	60.5	34.3	39.5
Atlanta	206,525	217,791	59.0	54.7	41.0	45.3
Denver	203,821	221,827	62.9	57.4	37.1	42.6
Kansas City, Missouri	208,543	222,241	61.0	56.9	39.0	43.1
Kansas City, Kansas	50,307	69,662	62.6	59.4	37.4	40.6
Milwaukee	316,862	313,174	64.9	58.3	35.1	41.7
Nashville	159,014	189,793	62.9	58.6	37.1	41.4
San Diego	193,723	244,347	64.7	59.8	35.3	40.2

SOURCES: U. S. Department of Commerce, Bureau of the Census, *Census Tracts* for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1960 and 1970.

TABLE 4.4

CIVILIAN LABOR FORCE PARTICIPATION BY NEGRO CIVILIANS OF LABOR FORCE AGE
1960-1970

	Number of Negro Civilians of Labor Force Age*		Percent in Negro Civilian Labor Force	
	1960 (14+ yrs. old)	1970 (16+ yrs. old)	1960	1970
Albuquerque	3,728	3,208	61.3	55.8
Atlanta	123,765	163,227	58.3	63.9
Denver	22,401	28,275	61.6	65.2
Kansas City, Missouri	55,839	68,872	60.6	64.7
Kansas City, Kansas	18,649	21,330	57.1	57.9
Milwaukee	37,804	58,078	61.8	64.2
Nashville	45,190	58,441	57.1	57.2
San Diego	23,469	28,034	56.5	58.0

* Calculated number of Labor Force age minus military. Military calculated number in labor force minus number in Civilian Labor Force.

SOURCES: U.S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville, and San Diego, 1970.

TABLE 4.5

CIVILIAN LABOR FORCE PARTICIPATION BY CIVILIANS OF LABOR FORCE AGE OF SPANISH LANGUAGE OR SURNAME 1960-1970

	Number of Civilians of Labor Force Age of Spanish Language or Surname		Percent in Civilian Labor Force	
	1960 (14+ yrs. old)	1970 (16+ yrs. old)	1960	1970
Albuquerque	25,561	51,105	54.4	57.1
Atlanta	NA	3,175	NA	63.3
Denver	24,890	50,150	52.6	58.1
Kansas City, Mo.	NA	7,756	NA	65.8
Kansas City, Ks.	NA	3,268	NA	58.9
Milwaukee	NA	8,508	NA	61.4
Nashville	NA	1,807	NA	66.6
San Diego	22,958	50,102	54.5	56.2

Sources: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville, and San Diego, 1970.

TABLE 4.6

OCCUPATIONAL EMPLOYMENT DISTRIBUTION (PERCENT)
1960-1970
CITIES IN URBAN OBSERVATORY SOCIAL INDICATORS NETWORK

	Professional and Technical		Managers, Officials Proprietors Including Farmers	Managers, Officials and Administrators	Clerical and Kindred		Sales	
	1960	1970	1960	1970	1960	1970	1960	1970
Albuquerque	19.3	24.4	12.3	10.4	19.1	20.8	8.6	9.1
Atlanta	10.0	13.6	8.2	7.4	18.1	22.0	7.8	6.7
Denver	14.2	18.4	9.8	8.9	20.3	22.8	8.5	8.2
Kansas City, Mo.	10.3	14.1	8.0	7.6	20.9	23.4	7.9	7.3
Kansas City, Ka.	9.1	11.4	5.5	5.7	17.6	22.4	5.9	5.3
Milwaukee	9.6	12.5	5.8	5.2	17.4	20.4	7.3	6.8
Nashville	9.5	15.8	4.9	9.2	15.5	21.2	5.4	8.2
San Diego	16.1	20.7	9.1	8.8	18.4	20.4	8.7	8.6

	Craftsmen and Foremen		Operatives and Kindred		Private Household		Services		Farm Laborers and Foremen	
	1960	1970	1960	1970	1960	1970	1960	1970	1960	1970
Albuquerque	13.1	10.7	9.2	7.6	2.4	1.4	9.0	11.9	NA	0.2
Atlanta	8.9	9.7	15.5	16.3	7.1	4.7	11.8	13.6	NA	0.3
Denver	11.5	10.4	12.6	11.9	2.0	1.2	10.2	13.6	NA	0.4
Kansas City, Mo.	10.7	12.0	17.1	15.6	2.6	2.2	11.1	9.7	NA	0.4
Kansas City, Ka.	13.7	15.4	23.6	22.3	2.5	2.4	11.9	11.2	NA	0.3
Milwaukee	14.9	13.4	14.0	22.2	1.3	0.8	9.4	13.8	NA	0.2
Nashville	10.7	12.9	19.0	14.4	7.7	2.1	15.2	11.7	NA	0.4
San Diego	14.8	11.9	12.8	10.3	2.4	1.4	9.1	13.5	NA	0.5

	Laborers Except Mine	Laborers Except Farm	Total		Occupation Not Reported	
	1960	1970	1960	1970	1960	1970
Albuquerque	3.6	3.4	71,271	99,617	3.4	NA
Atlanta	4.6	5.7	197,327	209,136	7.9	NA
Denver	4.7	4.1	196,383	212,695	6.3	NA
Kansas City, Mo.	4.7	5.3	198,670	255,769	9.8	NA
Kansas City, Ka.	6.9	6.7	47,281	67,232	5.3	NA
Milwaukee	4.7	4.6	302,251	300,294	5.6	NA
Nashville	6.7	4.1	67,068	183,432	5.3	NA
San Diego	4.4	3.9	179,589	228,112	4.3	NA

The second employment area which showed an across-the-board comparative rise in proportion of workers was in the clerical and kindred classification. Approximately one-fifth of all employees in the eight cities were employed as clerical and kindred workers. The range in 1970 was from 20.5% in Milwaukee and San Diego to 23.4% in Kansas City, Missouri.

The proportion of persons employed in sales remained fairly stable during the ten year period. The variation in the percentage of such persons was negligible in all eight cities. The range in 1970 was between 5.3% in Kansas City, Kansas, to a high of 9.1% in Albuquerque.

Except for Nashville, those employed as managers, officials and administrators showed a slight decline in employment. In Nashville persons employed in these occupations rose from 4.9% in 1960 to 9.1% in 1970. Albuquerque and Nashville had the highest percentage of such employees and Kansas City, Kansas, had the lowest percentage.

The picture, with respect to the employment of craftsmen and foremen exhibited a variable pattern. There was a decline in such employment in the cities of Albuquerque, Denver, Milwaukee and San Diego. The largest declines were in Albuquerque and San Diego. In contrast, there were slight increases registered in Atlanta, Kansas City, Missouri; Kansas City, Kansas, and Nashville. In 1970 the highest percentage of craftsmen and foremen was in Kansas City, Kansas, with 15.4%. The lowest proportion was in Atlanta with 9.7%. Similar mixed patterns were found for those employed as operatives and kindred workers with Albuquerque and Atlanta showing a slight rise in such employment and the remaining cities showing slight declines. The largest proportion of operatives and kindred workers was in Kansas City, Kansas, with

22.3% and Milwaukee with 22.2%. Albuquerque and San Diego were the low cities with 7.6% in Albuquerque and 10.3% in San Diego.

Employment in the services occupations increased in Albuquerque, Atlanta, Denver, Milwaukee and San Diego. The remaining cities registered declines. In 1970 Atlanta, Denver, Milwaukee and San Diego had an average of about 13.6% of all civilian labor force participants in service occupations. The lowest participation rate was 9.7% for Kansas City, Missouri.

Those employed as laborers represented less than 7% of the work force in any of the eight cities. There was very little variation in the rates of employment between 1960 and 1970. The lowest proportions of laborers as a percentage of the civilian labor force were in Albuquerque and San Diego, with less than 4% in each city being employed in such work. The highest proportion of laborers (6.7%) was in Kansas City, Kansas.

Employment levels in the remaining occupations--private household employment and farm laborers and foremen was negligible. However, it is noteworthy that each of the eight cities showed a decline in private household employment between 1960 and 1970. Only Atlanta still had a noteworthy percentage of its labor force in private household work--4.7%.

Those identified as farm laborers represented less than 1% of the labor force in any of the eight cities.

Unemployment

On April 1, 1972, there were 4,697,000 unemployed persons in the United States constituting 5.5% of the total civilian labor force.

Unemployment during the period 1960-1971 varied between 5.5% in 1960 to 5.9% of all workers. The lowest level of unemployment was 3.5% in 1969 and the highest level was 5.9%, in 1971. The unemployment rates for Whites were considerably lower than those for "Negroes and others" during this period. White, male workers, had the lowest rates of unemployment, varying between 2.5% in 1969 to 4.9% in 1971. Unemployment for White females ranged between a low of 4.2% in 1969 to a high of 6.3% in 1971. "Negroes and others" had unemployment rates which ranged between a high of 16.2% in 1960 to a low of 6.4% in 1969. In April 1972, the unemployment rate for "Negroes and others" was 9.0%. Except for the year 1960, rates of unemployment for Black females was lower than that for Black males. The unemployment ratio of "Negroes and others" to Whites was almost two to one. The ratios varied from a low of 1.8% to 1% in 1971 to a high of 2.1% to 1% in 1960.

The highest unemployment rates for any single subgroup was for teenagers. Unemployment for teenagers varied between a low of 12.2% to a high of 16.9%. Those with the lowest employment rates were married men whose wives were present in the home. The variation was from a high of 1.4% in 1969 to a low of 1.0% in 1971. This was true for both Whites and those identified as "Negro and other," although the rates for married Negroes and other males, where the wife was present in the home, was considerably higher than for Whites in this category.

The average duration of unemployment ranged from a low of 7.9 weeks in 1969 to a high of 11.4 weeks in 1971.[3]

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[3] U.S. Bureau of Labor Statistics, Handbook of Labor Statistics, Annual, Employment and Earnings, monthly. This data is also reported in the Statistical Abstract of the U.S., 1972, Table 351, p. 221.

Gross and Moses hold that unemployment rates and their rise or fall is a major gauge of the extent to which the society is succeeding in meeting the needs and aspirations of people for work. They also maintain that official unemployment statistics under-represent the true dimensions of the problem. While the "official rate is an important indicator of trends in the economy . . . it is far from being a real and accurate picture of the dimensions of unemployment of people in the U.S."[4]

For an individual to be included in the labor force, a person must be willing and able to work and must have actively sought a job in the four weeks immediately preceding the monthly population survey. Gross and Moses noted that many persons who meet the criteria of being willing and able to work have given up the search for jobs in the belief that suitable opportunities do not exist. They contend that if useful employment opportunities were afforded to all who were able and willing to work, total unemployment would be about 25,000,000 rather than the almost 5,000,000 now counted as unemployed. It is their belief that if jobs were made available that were "suitable, fair, fulfilling, non-exploitative, and peaceful" the work force could be increased substantially. They suggest that the unemployed should be defined as "all those who are not working and are able and willing to work for pay."[5] They estimate that in addition to the almost five million currently unemployed persons there are 2.7 million unemployed individuals, almost a million of whom are job seekers, who are discouraged by employment prospects, another

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[4] Bertram Gross and Stanley Moses, "Measuring the Real Work Force: 25 Million Unemployed," Social Policy, September/October, 1972, p. 5.

[5] Ibid., p. 6.

3.6 million who need some encouragement to seek work, about one million so-called "unemployables," five million housewives, about four million older persons (those fifty-five and over), three million students and about three-tenths million persons enrolled in manpower programs. If these were added to the official labor force of 85.8 million persons in 1971 the real labor force would include 104 million people, excluding the unemployed. "Real unemployment would then be 25.6 million."

The assumptions which Gross and Moses make are open to challenge since they are based on the untested conclusion that if employment opportunities were made available under the conditions they suggest that 25 million additional persons would actually take jobs. However, their contention that "the current economic system has failed to provide an adequate number of jobs to meet the needs and desires of the people,"[6] is undoubtedly true. It should be noted that Gross and Moses do not discuss the social consequences of adding this many new workers to the labor force.

The fact that total unemployment in the United States is underestimated is borne out by a recent official disclosure that California and and eleven other states have badly underestimated their unemployment rates. Starting in January 1974 these states will be using a revised system for counting the number of jobless workers. As a consequence, this will result in a substantial increase in the unemployment rate. In California, for example, it is estimated that the revised tabulations could result in an increase which is 2% more than that estimated under the old method. The other ten states which will show substantial increases in unemployment as a result of the revisions are New York, Pennsylvania, Illinois, Ohio,

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[6] Ibid., p. 10.

Florida, Texas, India, North Carolina, Missouri, Virginia and Wisconsin. Three states will be revising their figures downward. They are Michigan, New Jersey and Massachusetts. Since unemployment will be rising as a result of the energy crisis the new method for calculating the number of unemployed will magnify the figures even further.

The federal government arrives at its unemployment estimates by conducting monthly surveys of 50,000 randomly selected homes. About 5,000 households in this sample are surveyed in California but that state does not use data from the federal survey. Instead, it makes its own estimates of joblessness. "The state starts with the number of workers actually drawing unemployment benefits. Then it estimates, based on historical patterns, the number of people out of jobs but who are not drawing jobless benefits for some reason." The two figures are combined to yield an unemployment rate for the State. However, it has been found that the State's estimates have been consistently below the Federal estimates. Since the Federal sampling method is statistically more accurate the government has insisted that California and other states alter current practices.[7]

In contrast to Gross and Moses, Feldstein implies that the currently published rates are a fairly accurate reflection of the unemployment problem in the United States. His analysis of the causes of unemployment leads him to believe that it can be reduced to less than 3% and possibly to as low as 2%. He does not believe that expansionary macro-economic policies can be relied on to effect a reduction in unemployment among young workers. Instead, he proposes elimination of seasonal and cyclical fluctuations in the labor market and increasing the speed with which unemployed persons return to the work force.

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[7] *Los Angeles Times*, January 22, 1974.

In contrast to the current belief that unemployment can only be reduced by increasing the growth of demand, Feldstein maintains that "the problem is not that jobs are unavailable but that they are often unattractive."[8] Job attachment in marginal industries is weak, job quitting is common and periods of active job seeking are frequent. Feldstein notes that in January 1971, a year of high unemployment, only 46% of the unemployed were "laid off" from their previous jobs; most left their jobs voluntarily. In the past five years the number of quits exceeded the number of layoffs.

In Great Britain where unemployment was only 2.7%, unemployed persons have been without work for much longer periods of time than in the United States. The principal difference in the labor market structure of Great Britain as compared with the United States is that turnover rates there are approximately one-half the United States level. The British have been able to avoid much of the short-term unemployment which prevails in this country.

Youth unemployment. Job turnover in this country is particularly high among young workers. In 1971, male teenagers in the United States had an unemployment rate of 16.6%. In Great Britain young workers in comparable age groups had an unemployment rate of 1.2%. Chronic high unemployment among teenagers in this country, says Feldstein, is not due to inadequate demand but to the unnecessarily small absorption of new entrants into the labor market and the low job attachment among those who find work. New teenage entrants in this country spend about 9.1 weeks until they find their first job, contributing about 6.7% of the unemployment rate and 40% of total teenage unemployment.

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[8] Martin Feldstein, "The Economics of the New Unemployment," The Public Interest, Vol. 33, Fall 1972.

The problem of initial entry into the job market has been managed in Great Britain by providing youth employment services to young people who leave school and who do not have the intention to enroll in higher education. The Youth Service is active in providing job counseling for potential young workers long before they complete their public education. Feldstein recommends the development of a comparable system in this country.

The second important reason for teenage unemployment is the high quit rate characteristic of this group. Jobs for young people are largely unattractive and provide little opportunity for advancement. Both these factors lead to high quit rates and high unemployment rates.

Another factor to which Feldstein calls attention is that 23% of labor force between sixteen and twenty-one attend school. Their part-time attachment to the labor market accounts for about one-third of all unemployment among young people. In 1971 if students seeking part-time work were not counted as labor force participants, the youth unemployment rate would drop from 16.0% to 10.2%. "This movement of students into and out of the labor market is the price that we pay . . . (for providing) a very fluid educational system."[9]

In addition to the factors described above the motivations and attitudes of teenage workers is different from those of more mature employees. Young workers have few family responsibilities, many continue to live at home and most desire more leisure time than full-time employment will allow. This alternation between work and other activities contributes to high labor turnover and consequently to high unemployment rates.

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[9] Ibid., p. 5.

Feldstein also believes that the relatively high minimum wage paid to young people discourages employers from providing jobs. Feldstein suggests that as an alternative to wages, young people should be provided with subsidies for on-the-job training. The subsidy would be paid to the employer for all young workers. An alternative method would be to decrease the minimum wage for young workers and provide a stipend related to his financial situation and that of his family. Central to all programs "would be a Youth Employment Scholarship paid to young workers as a supplement to their wage income."[10]

Adult unemployment. Feldstein finds that many of the causes of youth unemployment also account for unemployment among mature adults. Adult workers who are laid off do not generally accept the first job which is offered. The average duration of unemployment is about three months. However, there is some variation. In 1969, duration of unemployment dropped below eight weeks. In 1971 it averaged eleven weeks, with about 45% of the unemployed being out of work for less than five weeks. A fall of as little as one month in the average duration of unemployment would lower the unemployment rate from 4.5% to to less than 3%. The computerized "job banks" which have been developed by the Labor Department may reduce this source of unemployment.

As with young people, weak labor force attachment accounts for some of the unemployment. Weak job attachment is usually correlated with lack of skills and lack of education. "Because they have low skills, little education, and generally bad work habits, they never enter the mainstream of employment opportunities. The only jobs open to them are the dead-end jobs with low pay and no future."[11]

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[10] Ibid., p. 13.

Lowered levels of labor force participation in the years between 1948 and 1970 indicates that macro-economic expansionary and tighter labor markets are unlikely to bring a significant reduction in voluntary unemployment. This fact has given rise to a variety of specialized manpower programs. More than six million persons were enrolled in federal manpower programs between the years 1963 and 1971 at a cost of nearly seven billion dollars. There has been no definitive evaluation of the impact of such programs. Absenteeism, frequent lateness, petty thefts and high quit rates are characteristic of many of the marginal workers enrolled in manpower programs. The author also believes that higher levels of public assistance, the availability of medicaid, food stamps and housing subsidies have "increased the attractiveness of non-employment or intermittent unemployment for those with low skills."[12]

In addition to able-bodied unemployment, there are substantial numbers of unemployables, those with physical disabilities, subnormal intelligence, and psychological problems. For these workers, the author recommends wage subsidies paid to private employers as incentives for hiring such persons. If these do not work he suggests developing and expanding programs of public employment. He also suggests similar remedies for handling the problem of workers with low skills and little education, but who are otherwise able bodied.

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[11] Ibid., p. 17.

[12] Ibid., p. 21.

In addition to the sources of unemployment referred to above, the author observes that the American labor market is marked by higher rates of cyclical and seasonal variations in demand than is the case in foreign countries. This is reflected in the fluctuations of the unemployment rates of the sixties which varied from 3.5% to 6.7%. In Great Britain unemployment rates varied from 2.1% to 3.4% during the same period. The author suspects that British employers are less likely to lay off employees during periods of slack in industrial production. It may also reflect differences in seniority arrangements, unemployment insurance rules and different attitudes about the proper relationship between employers and employees. Greater stability in employment in the U.S. could be managed by requiring employers to give minimum notice before employees are laid off, by requiring larger compulsory severence payments and by the imposition of tax penalties on industries characterized by volatile employment experience.

Seasonal work in the U.S. adds substantially to unemployment. If seasonal unemployment could be avoided completely the average unemployment rate would fall by almost 1%. Policies fostering increased holdings of inventories, the development of the alternative types of work during off-season, the reduction of transition time to new jobs would reduce by half current seasonal work which now causes more than 300,000 man-years of unemployment each year.

The author also believes that alterations in the current unemployment compensation system would reduce the incentives both to employers and employees to continue policies which result in increased rates of unemployment.

In summary, Feldstein demonstrates the possibility of reducing unemployment in the U.S. to levels which approach the British experience.

The policy measures which he proposes are all capable of implementation, although there might be some resistance to a few of the suggestions which he makes.

With this background, we can now turn to the experience with unemployment in the eight cities studied in this report.

Unemployment Rates in the Eight Cities

Table 4.7 gives data on unemployment rates for the eight cities for the years 1960 and 1970. Comparison between these two points in time has limited value since there was considerable variation in the unemployment picture during the decade under consideration. Unemployment rates have meaning only in the context of the peculiarities of the local economies, that is, the kinds of industries which dominate those communities, the skills and experiences available, the impact of federal programs bearing on the job market, etc. In the social reports produced by the eight cities, consideration is given to many factors influencing the rise and fall of unemployment levels. These influences together with the admonitions made by Gross and Moses should be kept in mind when the data shown in Table 4.7 is reviewed.

Unemployment for the eight cities in 1960 varied between a low of 3.9% for the city of Atlanta and a high of 6.7% for the city of Kansas. In 1970 the variation was similar, with a low of 3.5% for Atlanta and a high of 6.6% for San Diego. Unemployment did not vary by more than one percentage point for most of the cities except for Kansas City (Kansas and Missouri) and Nashville. The reason for this is that the latter communities occupied different boundary lines in 1970 as compared with 1960. In all three instances, the city boundaries were expanded to include large rural areas with low unemployment rates.

TABLE 4.7

UNEMPLOYMENT RATES IN EIGHT AMERICAN CITIES
1960-1970

City	Percent Unemployed: Total 1960	Total 1970	Non-White 1960	Negro 1970	Spanish Language or Surname 1960	Spanish Language or Surname 1970
Albuquerque	4.3	4.5	5.8	5.8		6.7
Atlanta	3.9	3.5	4.3	4.9		4.0
Denver	4.0	4.1	6.4	6.1		6.1
Kansas City, Mo.	5.8	3.9	9.1	6.4		5.1
Kansas City, Ka.	6.7	[illegible].8	9.9	6.9		4.7
Milwaukee	4.6	4.1	11.5	8.3		4.6
Nashville	5.3	3.4	5.5	4.9		4.5
San Diego	6.7	6.6	10.4	9.5		8.1

SOURCES: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

Of interest is the ratio between total unemployment levels as compared with unemployment levels of non-Whites in 1960 and with Blacks and those persons of Spanish language or surname in 1970. In every city at both points in time the unemployment rates for the minority populations exceeded those for the population as a whole. On a nation-wide basis, the unemployment rates for non-Whites was approximately twice that of Whites. The difference was somewhat less for the urban areas compared in this study.

Table 4.8 shows that unemployment ratios (total unemployment as compared with non-White unemployment) ranged between a low of 1.0% for Nashville to a high of 2.5% for the city of Milwaukee. Except for Milwaukee, the ratios in the remaining cities were lower than those reported for the country as a whole. In all cities the unemployment rates for the minorities exceeded the rates for the majority population. Black unemployment exceeded "Spanish language or surname" levels in every community except Albuquerque. The unemployment ratio in 1970 for Blacks was lowest in Albuquerque where it was 1.3%. It was highest in Milwaukee with a ratio of 2.0%. The lowest ratio in 1970 was 1.1% for those of "Spanish language or surname" residing in Milwaukee and Atlanta. The highest was for Albuquerque and Denver each with a ratio of 1.5%. Of the three cities with the highest percentages of Spanish language or surname populations, namely Albuquerque, Denver, and San Diego, San Diego showed the best performance with a ratio of 1.2%. Among the cities with the largest Black populations, Milwaukee showed the poorest performance and Atlanta and Nashville the best performance.

Other Measures Related to Employment

The eight city reports contain information on labor force size and composition, the changing characteristics of occupations and levels of unemployment. Comparisons were largely confined to the two census periods of 1960 and 1970 and the data was disaggregated by race and sex.

In addition, the observatories were encouraged to develop other types of information related to the job market. Several observatories experimented with a variety of measures including wage rate comparisons with other communities, differentials in per capita personal income, and the distribution of professional and technical employment opportunities by race. The examples given below are suggestive of what might be included in future social reports.

TABLE 4.8

UNEMPLOYMENT RATIOS

City	Total Versus Non-White 1960	Total Versus Negro 1970	Total Versus Spanish Language or Surname 1970
Albuquerque	1.3	1.3	1.5
Atlanta	1.1	1.4	1.1
Denver	1.6	1.5	1.5
Kansas City, Mo.	1.6	1.6	1.3
Kansas City, Ka.	1.5	1.8	1.2
Milwaukee	2.5	2.0	1.1
Nashville	1.0	1.4	1.3
San Diego	1.5	1.4	1.2

SOURCES: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

Wage rate comparisons. Denver and Albuquerque both submitted information on salary levels in their respective communities. The Albuquerque report, drawing on information from Denver, concluded that uion wage scales for selected comparative occupations clearly showed

"Albuquerque's workers had a disadvantage with neighboring Denver."[13] Disparities in wage rates were particularly pronounced in the building trades "with 1970 Albuquerque-Denver differentials of fifty-six cents and thirty-five cents per hour, respectively, in wages for journeymen and helpers."[14]

Per capita personal income. Albuquerque also developed information on per capita income for the years 1959, 1968, and 1969 and compared its local findings with those of selected SMSAs in the southwestern United States. A major finding was that per capita income in Albuquerque was 5% above the national average in 1959 but 15% below the national average in 1969. The intercity comparisons were also quite revealing. Except for Denver, all the communities which were compared had per capita personal income levels below the United States average and all seven metropolitan years which were compared except for Phoenix showed a decline in per capita income as compared with the country as a whole, although the absolute dollar amounts increased. In other words, per capita income was rising but not at the same rate as the average rise nationally. The table below is from the Albuquerque report and is reproduced as an illustration of the type of data which might be used in future local social reports in which regional comparisons on this variable is made.

In discussing the possible reasons for the relative decline in Albuquerque's per capita income, the report speculated that "this pattern suggests that new industries are being attracted to Albuquerque at least partially because of the low prevailing wage rates in the metropolitan area."[15]

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[13] Patrick H. McNamara, "Social Report for Metropolitan Albuquerque," Albuquerque Urban Observatory, January 1973, p. 15.

[14] Ibid., p. 15. [15] Ibid., p. 20.

TABLE 4.9

PER CAPITA PERSONAL INCOME*: SELECTED SOUTHWESTERN SMSAs 1959, 1968, and 1969

	Dollars			Percent of U.S. Average		Percent Changes	
	1959	1968	1969	1958	1969	1959-1969	1968-1969
Albuquerque	2,268	3,021	3,135	105	85	38.2	3.8
Amarillo	2,258	2,964	3,486	104	95	54.4	17.6
Denver	2,505	3,533	3,889	116	105	55.2	10.1
El Paso	1,818	2,651	2,895	84	78	59.2	9.2
Phoenix	1,984	3,211	3,498	92	95	76.3	8.9
Salt Lake City	2,104	2,973	3,190	97	86	51.6	7.3
Tucson	2,009	2,929	3,240	93	88	61.3	10.6

* Where received; not at place of residence.

SOURCE: Survey of Current Business, May 1971. Reproduced in New Mexico Business, January 1972, p. 4.

Professional and technical employment by race. The Albuquerque report also showed a rather interesting table on the occupational distribution of professional and technical workers by race. The major finding was that all workers in these occupations constitute 23.5% of the employed labor force in 1970. However, Blacks only had 17.9% of its employed labor force in professional and technical occupations and "Chicanos" only had 12.8%. No information was included on the distribution of such employment by sex. Since the highest paying jobs are mostly in these occupations, this would be a useful indicator to include in future social reports.

Projections of Selected Labor Force Composition and Trends

It is difficult to make predictions about the future composition of the labor force and labor market trends which are based solely on the decennial census. As this is being written, labor market dislocations associated with the energy crisis makes it even more difficult to prognosticate the future. However, there are some basic underlying forces associated with the social composition of the labor force which makes it possible to hazard some guesses concerning two probable future developments.

Female employment. The increasing tendency of women to enter the labor force in larger numbers and the demands for affirmative action to provide additional jobs for them in all sectors of the labor market and at pay scales comparable to those which are now being paid to male workers, will probably continue. Females will probably constitute a larger proportion of the labor force in 1980 than in 1970. They will demand and secure jobs in occupations currently denied to them and they will demand and receive wage and salary levels which more closely approximate those currently commanded by male members of the labor force.

The 6% increase in female labor force participation which occurred between 1960 and 1970 will probably be equalled during the decade of the 1970s. We can thus anticipate that almost 50% of all females eligible for inclusion in the labor force will be participating in it. One of the consequences of this will be an increased demand for child care services. While the falling birth rate may temper this demand, it will nevertheless result in pressure for a level of child care services considerably higher than current levels. Given the tendency to return the responsibility for provision of human services to local political entities, pressure for such services will be felt most directly at the community level.

Occupational upgrading of Blacks. Brimmer provides an excellent summary of the labor market position of Blacks during the decade of the 1960s. Notable achievements in opening job opportunities for Blacks occurred during that decade. The most impressive advances were made in the higher paying occupations. Overall employment opportunities in the professional and technical occupations increased by 49% between 1960 and 1971 but the number of Blacks in professional and technical positions increased by 128%. In 1960 only 4.4% of such positions were held by Blacks. By 1971 the share increased to 6.8%. Similarly, employment of managers, officials and proprietors expanded by 23% during the decade of the 1960s but Black employment in these categories increased by almost 100%. It is Brimmer's view that if "Blacks had not been handicapped by previous discrimination which limited their education and experience, they could have gotten an even larger share of the managerial positions which opened up during the decade."[16]

In addition, Blacks left low paying jobs in agriculture and in household service at a rate one and one-half times faster than White workers. Blacks also made substantial progress during the decade in obtaining clerical and sales jobs and employment as craftsmen.

Despite these gains Blacks were not represented in the preferred occupations at a level commensurate with their representation in the population. In addition, in 1971 Blacks still had one-quarter of the service jobs outside of private household jobs. Such jobs require only modest skills. The number of Blacks holding semi-skilled operative jobs rose by about 25%. The occupational deficit of Blacks in white-collar employment in 1971 still averaged about 40%. In summarizing this brief overview, Brimmer makes the point that "during the 1960s and continuing into the present decade, Blacks made measurable strides in terms of occupational upgrading. Some of the advances were undoubtedly facilitated by federal government efforts to check racial discrimination. Yet, on balance it appears that the net impact of those efforts was not as decisive as it could have been . . ."[17]

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[16] Andrew F. Brimmer, "Economic Developments in the Black Community," The Public Interest, No. 34, Winter 1974, p. 160.

There is good reason to believe that the progress registered in the 1960s will continue through the 1970s. The chapter on education will show that Blacks have registered substantial progress in enrollments in higher educational institutions. Increasingly large numbers of Black students will be graduating during the decade of the 1960s and will be amply prepared to compete successfully for jobs available in the preferred higher-paying occupations. In addition, the strengthened 1972 amendments to the Civil Rights Act for the first time gives the Equal Employment Opportunity Commission power to enforce the provisions of the act which bar job discrimination. This will also facilitate entry into occupations from which Blacks were effectively barred in the past. Between 1971 and 1972 alone the share of the professional and technical jobs held by Blacks increased from 6.8% of total employment to 7.2%. Progress will probably be slower than during the period of the 1960s but it will be substantial.

For those Blacks who have dropped out of school or who do not continue with higher education the problem of unemployment promises to be as intractable as it was during the 1960s. In 1969 there were 55,000 more unemployed Black youths than in 1960. "The inability of the economy to meet the job needs of Black youth was one of the main shortfalls in national economic policy during the last decade."[18] With a recession facing the country as a result of the energy crisis and the current inflationary trends in the economy, the problem of unemployment among Black youths will be exacerbated. Local manpower policies will require that increased and substantial attention be paid to the problem of youth unemployment in general, and to unemployment among minority youth in particular.

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[17] Ibid., p. 161.

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[18] Ibid., p. 148

Chapter 5

INDICATORS OF HEALTH AND WELL-BEING

Introduction

There is no single statistic which can be used as a measure of the overall quality of the health of communities. In the past, the infant mortality rate was used as such a universal measure of health status. It is now generally agreed that this measure, while still important, has limited utility.

A number of suggestions have been made to develop a single measure of health status but there is increasing skepticism about whether such a measure can ever be developed. The likelihood is that for the next decade, at least, health status will be measured by an array of related health indicators. Such indicators should, at the least, address the following three basic questions: "Are we getting healthier?" "How much healthier could we be?" "Why aren't we healthier?"[1]

The Urban Observatory adopted the strategy of utilizing existing sources of health data in its initial quality of life reports. It was agreed that all Observatories would focus attention on infant mortality statistics for the purpose of generating inter-city comparisons. In addition, each Observatory was encouraged to develop alternative health measures and to make specific suggestions for the improvement of social reporting on the quality of community health. As a consequence, this chapter will focus attention on the uses to which infant mortality data can be put as well as making explicit the limitations inherent in their use. The remainder of the chapter will be focused on suggestions for broadening the scope of health status reporting.

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[1] U. S. Department of Health, Education and Welfare, "Toward a Social Report," Washington, D. C.: U.S. Government Printing Office, January 11, 1969, pp. 1-13.

Are We Getting Healthier?

Toward a Social Report, a document produced by a panel on social indicators of the Department of Health, Education and Welfare attempted to answer this question.

The report noted that diseases, like polio and diptheria have almost disappeared. Tuberculosis and measles were found to be far less prevalent than heretofore and the "miracle" drugs were found to have reduced danger from infectious diseases to an extraordinary degree. As a consequence, the "increase of life expectancy" has been striking. However, most of the gain has come about as a result of the reduction of death rates among infants and children. "Life expectancy in older ages has not improved greatly because medical science has not yet developed the knowledge needed to control the degenerative diseases of old age."[2]

While there has been a marked decrease in such infectious diseases as diptheria, measles, polio, and whooping cough, the incidence of other diseases including hepatitis, food-borne infections and streptococcal infections have been increasing in frequency. The "age-specific death rates for coronary heart diseases among adults have continued to advance as have death rates for cancer of the lung, cirrhosis of the liver, and chronic lung diseases such as emphysema and chronic bronchitis. The death rate for motor vehicle deaths has also risen, but less markedly."[3]

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[2] Ibid., p. 2.

[3] Ibid., p. 2.

The conclusion of the authors was that the nation is not getting healthier, although there is some recent evidence that the infant mortality rate is beginning to drop once again after remaining practically unchanged from 1950 to 1965. There was also abundant evidence for a reduction in the "suffering" associated with physical illness because of the development of tranquilizers, pain killers, and sedatives in recent years.[4]

These comments suggested collecting indicator data on infant mortality, life expectancy, and the specific progress or regress of health programs intended to reduce the major causes of death.

How Much Healthier Could We Be?

The second question asked by the HEW panel was "How much healthier could we be?" The answer was that any advance in health status made during the next several decades would probably be far below that gained during the first half of this century unless there are "extraordinary, significant breakthroughs in the treatment of degenerative diseases . . . ."[5] The report identified areas in which substantial improvement could be made during the next decade. For example, marked differences in life expectancy and in infant mortality were found among diverse geographic regions of the country and between the White and non-White populations. Life expectancy at birth varied by about five years when States with the best records were compared with those with the worst records. The infant mortality rate was twice as great in the poorest State as in the best State, and the maternal mortality rate was found to be four times as great. "In the worst 10% of the counties the infant mortality rate in 1961-1965 was about twenty-one per thousand live births more than in the best 10% of the counties."[6]

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[4] Ibid., p. 2. [5] Ibid., p. 5. [6] Ibid., p. 5.

Improvements in life expectancy can be anticipated through the reduction of infant and maternal mortality rates among the poor and from reduction of infectious disease rates among Blacks.

Black mortality rates tend to be higher for certain tumors, such as cancer of the cervix. Death rates from these causes could be reduced by improved health services and better services delivery. In addition, it was found that less than one-half of low-income children with chronic conditions were under treatment and that two-thirds of these conditions could be prevented or corrected if appropriate health services were available.

International comparisons revealed that life expectancy in countries like Holland, Sweden, and Norway, was about 3.5 years longer than in the U. S. Twenty-seven countries had lower age-adjusted death rates from heart disease among males. The lower life expectancy in the U. S. was attributed to our life style and the pressures of our competitive society.

> More than a dozen countries have lower rates of ulcers, diabetes, cirrhosis of the liver, hypertension without heart involvement and accidents than we do. Our high automobile accident rate is probably due to the fact that we have more automobiles and use them more. The rates of death from diabetes and cirrhosis of the liver may be partly explained by the fact that we eat and drink more than other people. The high rates of ulcers and hypertension may be part of the price we pay for our dynamic and competitive economy.[7]

In answer to the question--how much healthier could we be?--appropriate health indicators would require that data on mortality and morbidity be disaggregated by geographic area and by income and race. In developing norms against which progress might be measured, national as well as international bench marks were suggested. Comparison of the

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[7] Ibid., p. 7.

United States experience with other countries on life expectancy, employment of infant and maternal mortality and indices which measure specific disabilities and cuases of death was also suggested. Internal comparisons by race, family income and region would provide measures of progress or regress of disadvantaged sectors of the population.

Why Aren't We Healthier?

Finally, in answer to the question--Why aren't we healthier?--the authors conjectured that poor health and low life expectancy is influenced by excessive smoking, lack of exercise, poor nutrition, and the unequal distribution of income and medical care. "More than 20% of people and families with incomes less than $3,000 never visit a dentist, as compared to 7.2% of those in families with incomes over $10,000."[8] In most major cities, "one-third to one-half of the women (who) delivered (their babies) in public hospitals . . . had no prenatal care."[9] This was contrasted with experience in the Netherlands, a country with low infant mortality rates, where nearly all expectant mothers get prenatal care and where a "substantial proportion of babies are delivered at home rather than in hospitals."

Rural areas in the United States tend to have fewer doctors than metropolitan areas and city ghetto areas have fewer doctors than middle class neighborhoods in the same cities.

> In general, States with low doctor/population ratios tend to have high infant and maternal mortality rates, a relatively higher incidence of infectious diseases and a shorter than average life expectancy.[10]

A major answer to the question of why we are not healthier is the rapidly rising cost of medical care. Despite the introduction of Medicare and Medicaid "the medically indigent and persons over age sixty-five must still pay for a substantial share of their own medical expenses."[11] In general, poor people cannot afford to pay the cost of preventive medicine. In 1963-1964, 54% of persons under seventeen years of age with family incomes in excess of $10,000 had at least one general physical examination, but only 16% of persons under seventeen years of age with family incomes of less than $2,000 had a routine checkup.

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[8] Ibid., pp. 6-7. [9] Ibid., p. 7. [10] Ibid., p. 10.

Social indicators implicit in the answer to why we are not healthier would suggest measures of the proportion of income available for medical care by various sectors of the population, the proportion of total medical expenditures devoted to prevention and the differential distribution of preventive care to various racial and income groups in the U. S.

Infant Mortality Rates--What Do They Indicate?

Maternal and infant mortality rates are still regarded by many observers as "two of the most sensitive indicators of health status."[12]

Stewart asserts a relationship between the level of economc development of communities and the rates of infant mortality.

> High rates of infant mortality are associated with low socioeconomic conditions, poor sanitation, and limited medical facilities and resources. In fact, the infant mortality rate is so revealing as an index of health of a community that given the rate and some

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[11] Karl E. Taeuber, "Toward a Social Report: A Review Article," The Journal of Human Resources, Vol. 5, No. 3, University of Wisconsin Press, 1970; also appears as a publication of the Institute for Research on Poverty, Madison: University of Wisconsin, Reprint No. 62, 356-7.

[12] Phillip R. Lee, "Health and Well-Being," in Social Intelligence for America's Future, Bertram M. Gross, editor, (Boston: Allyn and Bacon, Inc.), 1969, p. 438.

> indication of the trend of that rate over the past generation, it is possible to describe fairly accurately the state of economic development of the community, its age structure if migration is negligible, and the diseases most active as cuases of death.[13]

Moriyama does not regard infant mortality rates as key measures of health status. He states that health levels are now most adequately measured "when mortality rates are supplemented by morbidity rates and other measures of well-being."[14]

Dean Krueger, [illegible]cting Director, Office of Health Statistics and Analysis, of the National Center for Health Statistics, shares Moriyama's view that it is no longer appropriate to use infant mortality data as a measure of general health status. In the past, most infant deaths were caused by infectious diseases, which also affected the remainder of the population; thus, there was more justification for using infant death rates as an indicator of the general health of the population. However, Krueger agrees that there is still value in using infant mortality rates as an indicator of the differential health status of mothers and infants when Blacks are compared with Whites or when low-income populations are compared with high-income populations.[15]

When used as a health indicator, infant mortality data have the virtue of providing a long and generally comparable series of statistics. There is no other comparable body of routine statistics which provides diagnostic data for nations as well as for smaller governmental entities.

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[13] W. H. Stewart, "Health Assessment," The Health of America, Englewood Cliffs: Prentice-Hall, Inc., 1970, p. 48.

[14] Iwao M. Moriyama, "Problems in the Measurement of Health Status," in Eleanor Sheldon and Wilbert Moore, Editors, Indicators of Social Change, New York, Russell Sage Foundation, 1968, p. 584.

[15] Telephone conversation with Dean Krueger, April 10, 1973.

In almost all social indicator studies, the infant mortality rates are used as surrogates for almost all other health measures. While this is no longer justified, it appears that these rates will continue to be key indicators of differential health status for infant well-being when different racial, ethnic, and income groups are compared.

How Is Infant Mortality Defined?

The term infant mortality refers to the number of deaths in the first year of life per 1,000 live births that year. It is the most commonly used measure of infant deaths. Other measures include neo-natal mortality, that is, the number of infant deaths during the first twenty-eight days following birth per 1,000 live births. Post-neo-natal mortality is a measure of the number of infant deaths from the twenty-ninth day following birth up to one year of age per 1,000 live births. The combination of neo-natal and post-neo-natal rates is what constitutes the infant mortality rate.

Other measures related to infant mortality are fetal death rates, that is, the number of still births, and rates of maternal mortality. The subsequent discussion will only include reference to infant deaths up to one year following birth.

Infant Mortality in the United States

At the turn of the century the infant mortality rate for the United States was 162.4 per 1,000 live births, a rate which is comparable to the highest rates that now exist in the most economically backward countries of the world. The high rates in the first third of this century, in large part, explains the low overall longevity of the U. S. population during those years. Table 5.1 shows the dramatic decline in infant mortality for each decade since 1900.

TABLE 5.1

INFANT DEATH RATES IN THE UNITED STATES
1900-1970

Year	Infant Mortality Rates
1900	162.4
1910	131.8
1920	92.3
1930	69.0
1940	54.9
1950	33.0
1960	27.0
1970	19.8

Source: U. S. Bureau of the Census, Statistical Abstract of the United States: 1971. (92d Edition) Washington, D. C., 1971. Adapted from Table 72, page 55, and Table 57, page 48.

While the decline in the infant death rates has been rather remarkable, there are many advanced countries with records superior to that of the United States.

How Do the United States Infant Death Rates Compare with Other Countries?

The United States spends more per capita on health than any other country in the world. It has the most advanced medical schools, the most advanced health research programs, and the most sophisticated health technology. Yet, many countries have lower infant death rates than the United States. In 1970, the infant mortality rate in the United States hit an all time low of 19.8 deaths per 1,000 live births. Table 5.2 shows that for the years 1969 and 1970, there were at least twelve countries with infant death rates lower than the United States' rate.

TABLE 5.2

INFANT MORTALITY RATES BY COUNTRY

Country	Year	Infant Mortality Rates
UNITED STATES	1970	*19.8
Canada[1]	1969	19.3
Ireland	1970	19.2
United Kingdom	1969	18.6
Australia	1970	*17.9
New Zealand	1970	16.7
Switzerland	1969	15.4
Japan[2]	1969	*15.3
France	1970	*15.1
Denmark[3]	1969	14.8
Netherlands[4]	1970	*12.7
Finland	1970	*12.5
Iceland	1969	*11.7

* Provisional

[1] Including Canadian residents temporarily in United States, but excluding United States residents temporarily in Canada.

[2] Data for Japanese nationals in Japan only.

[3] Excluding Faero Islands and Greenland, shown separately.

[4] Including residents outside the country if listed in a Netherlands populations register.

Source: United Nations, Demographic Yearbook, 1970, Special Topic--Population Trends, 22nd Issue, Table 16, pp. 646-652.

The lowest reported rate of 11.7 deaths per 1,000 live births was from Iceland. In general, Scandinavian countries have for many years posted the lowest infant death rates in the world.

Among the five leading industrial nations in the world, Japan and France had infant death rates which were about 25% lower than those of the United States. However, the rates for both the Soviet Union and West Germany exceeded the rate for the United States in 1970. The provisional infant death rate for the Soviet Union in 1970 was 24.4. For the Federal Republic of Germany, the provisional rate was 23.5

Among the poorer countries of the world, infant mortality rates are extremely high. For example, in 1970 the rate for the United Arab Republic was 119.0; the rate for the colored population of South Africa was 103.7. In 1969, the latest date for which information is availabke, several South American countries had rates which exceeded fifty per 1,000 live births. For Columbia, the rate was 74; for Equador, 86.1; and for Uruguay, 53.9.

While it is true that most countries in the world have infant death rates which exceed those of the United States, there is good reason to believe that the United States rate can be reduced considerably from the current level. While many variables are associated with high rates of infant mortality, such as low infant birth weight, poor prenatal and post-natal care, nutritional deficiencies, etc., the strongest single causal factor is probably the level of family income.[16]

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[16] Helen C. Chase, editor, "A Study of Risks, Medical Care, and Infant Mortality," American Journal of Public Health, Vol. 63, September 1973, Supplement.

It has already been shown that the rates are lower for Whites than they are for Blacks. The difference is not genetic but reflects differences in economic status. The death rates for both Blacks and Whites have declined with the general rise in family income. This will continue to be the case. The abolition of poverty in the United States and reduction in the numbers of those living on incomes close to the poverty line will result in further reductions in the infant death rates. If the infant death rates indirectly reflect the general health status of the minority and low-income populations, we can anticipate that rising income levels and the elimination of poverty will result in better health for all Americans.

Wilbur Cohen has suggested that the United States set a goal for the year 1976 to reduce the 1970 infant death rate of 19.8 per 1,000 live births, to 12.6.[17]

Infant Mortality Rates in the Eight Cities

Infant mortality rates in the United States declined from 27.0 per thousand live births in 1960 to 19.8 in 1970. The latest available information shows that this decline is still continuing, with the rate for the United States down to 19.2 per thousand live births in 1971. This dramatic decline in the rates of infant mortality began in the mid 1960s.

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[17] Full Opportunity Act, Hearings before the Special Subcommittee for Evaluation and Planning of Social Programs of the Committee on Labor and Public Welfare, U. S. Senate, 91st Congress, 1st and 2nd Sessions, on S.5, to promote the Public Welfare, July 7, 8, 10, 18, December 8, 1969, and March 13, 1970, Washington: U. S. Government Printing Office, 1970, p. 63.

While there is no consensus about the reasons for this decline, there has been considerable speculation. Some maintain that the "pill" and freer access to abortions has resulted in reduction of the number of unwanted babies. The implication is that those who do not want children are most apt to lose them.

In addition, there has been a decline in the number of persons living in poverty. The number of very low-income persons was reduced by fourteen million individuals in the 1960s. This was a period marked by rising income levels for all sectors of the population. It was also a time during which low-income persons were provided with increased access to medical services. The proliferation of health services and the location of neighborhood clinics in low-income areas may have also contributed to the decline in infant death rates.

There is no way of telling how much each of these conjectured reasons contributed to the final result. However, it can be demonstrated that there is an association between higher family income levels and low infant mortality rates. In San Diego, for example, La Jolla, an affluent subregional area within the city, had an average family income in 1969 of $22,041. The infant mortality rate in La Jolla averaged 5.8 per thousand live births for the period 1969 through 1971. By way of contrast, Southeast San Diego - East, a very low income area with average family income in 1969 of $7,008, had an infant mortality rate of 36.8.[18]

The most recent confirmation for the strong association between infant mortality and socio-economic status comes from a study of the cohort of 142,017 live infant births in New York City, in 1968.[19] Of this number 3,115 infant deaths occurred during the first year following birth, yielding an infant mortality rate of 21.9 per thousand. The educational attainment of the infant's mothers was used as a measure of socio-economic status. The findings clearly showed that low infant mortality rates are associated with increasingly higher levels of education. For those with elementary school education or less, the infant mortality rate was 27.7 per thousand live births. For those with four or more years of college, the infant mortality rate was 11.0 Analysis of the data showed step by step decreases in the rate of infant mortality with increases in educational levels.

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[18] Robert Ontell, The Quality of Life in San Diego, San Diego Urban Observatory, March 1973, p. 49.

Another important variable related to infant mortality in this study was the weight of the infant at birth. Exceptionally high rates of infant deaths were found when the infant weighed 2,500 grams or less at birth as compared with those who weighed 2,501 grams or more. However, the survival chances of infants with low birth weight improved with the level of education of the mother. Thus, the mortality rate for low-weight infants whose mothers had an elementary level of education or less was 163.7 per thousand. This high figure dropped to 96.2 per thousand for those low-weight infants whose mothers had four or more years of college education. The authors of the report were particularly impressed by the "regular and marked reduction in the proportion of low birth weight infants with increased education among the Negro native-born group . . . the fact that the differential between this ethnic group and others in the proportion of low birth weight infants diminishes both in absolute and relative terms sheds some doubt on a hypothesis that birth weight is genetically determined . . ."[20]

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[19] Helen C. Chase, editor, "A Study of Risks, Medical Care, and Infant Mortality," American Journal of Public Health, Vol. 63, September 1973, Supplement, pp. 22-26.

Infant Mortality in the Eight Cities--1960-1970

The infant mortality rates in the eight cities follows the United States pattern. Every city showed a reduction in the infant mortality rates between 1960 and 1970. Table 5.3 shows a range in infant mortality rates in 1960 from a low of 23.7 for the city of Milwaukee to a high of 32.9 for Atlanta. In 1970, the range varied from a low of 15.0 for Kansas City, Kansas, to a high of 22.7 for Atlanta. In 1960 when the United States rate was 26.0, Milwaukee, Nashville, and San Diego had rates which were less than the national rate. In 1970 Atlanta, Kansas City (Missouri), and Nashville exceeded the national rate of 19.8.

Infant Death Rates for Whites and Blacks

Table 5.4 shows that the infant mortality rates for Blacks has been consistently higher than that for Whites since 1940. While the rates for both Blacks and Whites have declined by almost half, the difference ratio has remained almost constant.

Table 5.5 shows that, on a proportionate basis, for every one-hundred White infants who died in 1940, there were 171 Black infants who died that year. Notice that the ratios varied between one-hundred to 166 in 1950, and one-hundred to 189 in 1960. Despite the fact that infant mortality rates for Blacks and Whites have both declined, the gap between Whites and Blacks with respect to this variable has remained fairly constant.

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[20] Ibid., pp. 23-24.

TABLE 5.3

INFANT MORTALITY RATES IN THE EIGHT CITIES 1960-1970

City	1960	1970
UNITED STATES		
Total Live Births	4,258,000	3,718,000
Total Infant Deaths	111,000	74,000
Infant Mortality Rate	26.0	19.8
Albuquerque		
Total Live Births	6,919	5,981
Total Infant Deaths	205	112
Infant Mortality Rate	29.6	18.7
Atlanta		
Total Live Births	12,270	10,620
Total Infant Deaths	404	241
Infant Mortality Rate	32.9	22.7
Denver		
Total Live Births	NA	NA
Total Infant Deaths	NA	NA
Infant Mortality Rate	26.4	17.8
Kansas City, Kansas		
Total Live Births	4,300	3,380
Total Infant Deaths	118	51
Infant Mortality Rate	27.4	15.0
Kansas City, Missouri		
Total Live Births	12,284	9,555
Total Infant Deaths	325	214
Infant Mortality Rate	26.5	22.4
Milwaukee		
Total Live Births	19,798	14,094
Total Infant Deaths	469	261
Infant Mortality Rate	23.7	18.5
Nashville		
Total Live Births	9,759	8,014
Total Infant Deaths	237	173
Infant Mortality Rate	24.3	21.6
San Diego		
Total Live Births	14,604	12,420
Total Infant Deaths	352	240
Infant Mortality Rate	24.1	19.3

TABLE 5.4

INFANT DEATH RATES BY RACE: UNITED STATES 1940-1969

Item	1940	1950	1955	1960	1965	1966	1967	1968	1969
Infant Deaths[1]	47.0	29.1	26.4	26.0	24.7	23.7	22.4	21.8	20.7
White	43.2	26.8	23.6	22.9	21.5	20.6	19.7	19.2	N.A.
Black & Others	73.8	44.5	42.8	43.2	40.3	28.8	35.9	34.5	N.A.

[1] Represents deaths of infants under one year old, exclusive of fetal birth, per 1,000 live births.

Source: U. S. Bureau of the Census, Statistical Abstract of the United States: 1971, (92d Edition), Washington, D. C., 1971. Adapted from Table 73, p. 55.

TABLE 5.5

RATIO OF WHITE TO BLACK INFANT MORTALITY RATES United States 1940-1968

Year	White-Black Ratio
1940	1:1.71
1950	1:1.66
1955	1:1.81
1960	1:1.89
1965	1:1.87
1966	1:1.88
1967	1:1.82
1968	1:1.80

Source: Adapted from Table 5.4

Infant Mortality--Racial Differences in Five Cities

Complete information on infant mortality for Whites and Blacks for the years 1960 and 1970 was only available for the five cities shown in Table 5.6. Whites in all five cities showed a substantial drop in the infant death rates between 1960 and 1970. Those cities with the highest rates of infant mortality in 1960 showed the most improvement. On a percentage basis, the decrease in infant mortality among Whites was highest in Atlanta with a drop of 43%. The infant mortality rate in Atlanta which was 26.1 per thousand live births in 1960 dropped to 14.9 by 1970. Of the five cities, it had the lowest rate for Whites in 1970.

Albuquerque, which had an infant mortality rate of 25.6, also showed a substantial drop during the decade of the 1960s. Yet, its 1970 rate of 18.5 per thousand live births was the highest among the five cities compared, although this represented a 28% decrease in infant mortality since 1960. Albuquerque has a large percentage of poor Hispanic-Americans included in its statistics for the White population. Information on the infant mortality rate for this population was not available for the year 1970. In 1960, however, the Spanish surname and Mexican populations residing in Albuquerque had an infant mortality rate of 32.0 per thousand live births, a figure substantially higher than that for the remaining White population.

Infant mortality rates for Milwaukee's White population decreased from 23.0 in 1960 to 15.7 in 1970, a 31% drop. Nashville and San Diego averaged about a 20% drop in the infant mortality rate for Whites during the decade of the 1960s.

In the five cities, the rate for Blacks for both 1960 and 1970 was substantially higher than that for Whites. However, during the decade, the infant mortality rate for Blacks decreased in four of the five communities studied. Only in Nashville was there a slight increase in the rate from 39.8 in 1960 to 41.0 in 1970. When the rates for Blacks were compared on a percentage basis in no case did the improvement equal that of the Whites. The greatest improvement was in Atlanta where the infant mortality rate declined from 40.8 in 1960 to 27.6 in 1970, a 32% improvement. The improvement in Milwaukee was 27%, in San Diego 16%, in Albuquerque 9%, and in Nashville there was no significant change. These figures indicate that while both Whites and Blacks have experienced a reduction in infant mortality rates, the gap between Blacks and Whites has increased over the decade rather than decreased. Thus, we have a situation in which this condition is improving for Blacks while, at the same time, they are falling farther behind Whites, at least in the cities on which information was available for this study.

If the racial and ethnic minority rates are considered alone, these would be among the highest when compared with the most industrialized nations in the world. While there has been significant improvement in the past ten years, it is obvious that much more can be done to reduce this problem among the most vulnerable groups in our society.

TABLE 5.6

INFANT MORTALITY RATES BY RACE IN FIVE CITIES
1960-1970

City	White 1960	White 1970	Black 1960	Black 1970
Albuquerque				
Total Live Births	919	5,633	177	168
Total Infant Deaths	177	104	8	7
Infant Mortality Rate	25.6	18.5	45.7	41.7
Atlanta				
Total Live Births	5,840	4,104	5,840	6,516
Total Infant Deaths	166	61	238	180
Infant Mortality Rate	26.1	14.9	40.8	27.6
Milwaukee				
Total Live Births	7,120	2,678	10,488	3,601
Total Infant Deaths	394	42	391	98
Infant Mortality Rate	23.0	15.7	37.3	27.2
Nashville				
Total Live Births	7,525	6,036	2,234	1,977
Total Infant Deaths	148	92	89	81
Infant Mortality Rate	19.7	15.2	39.8	41.0
San Diego				
Total Live Births	13,038	10,811	1,566	1,609
Total Infant Deaths	294	190	58	50
Infant Mortality Rate	22.5	17.6	37.0	31.1

Other Types of Mortality Data

Numerous suggestions have been made by those working with social indicators to develop indices of mortality in addition to the infant death rates. Thus, information has been developed on average life expectancy and the leading causes of death in the United States and within its political and geographical subdivisions. One of the problems such measures at the local level stems from the high mobility of the United States population. Unless this factor can be held constant, local reporting on the types of mortality can be highly misleading. It might be useful to consider developing age-specific mortality data at the local level if information could be obtained on those individuals who had been continuous community residents since birth. Life expectancy as well as other types of mortality data could then be compared by region, by race, by specific causes of death and other such variables. Insights might be forthcoming from significant differences detected in such comparisons and health programs could then be undertaken to improve specific local health conditions.

The following discussion will focus on data related to life expectancy in the United States and to suggestions which have emanated from the Albuquerque, Nashville, and San Diego studies with respect to longevity as well as age-specific data related to the principle causes of death in the United States and the cities which provide information on this topic.

Life expectancy in the United States in 1968 was 70.2 years. This represents a 29.8% increase since 1920 when the average life span was only 54.1 years. Table 5.7 shows that most of this increase took place in the thirty-year period between 1920 and 1950.

The table also indicates that the largest gains were made by females. Increases in life expectancy for females exceeded increases for males for each period covered in the table. In the forty-eight years between 1920-1968, life expectancy for males increased by 24.3%. For females, the increase was 35.5%. However, as in the case of males, most of the gains for females took place in the thirty-year period between 1920 and 1950. While female life expectancy since 1960 was somewhat greater than that for males, the rate of increase was small when compared with the preceding periods.

TABLE 5.7

EXPECTATION OF LIFE AT BIRTH IN THE UNITED STATES
By Sex - 1920-1968

Year	Total	Percent Difference	Male	Percent Difference	Female	Percent Difference
1920	54.1		53.6		54.6	
1930	59.7	10.4%	58.1	8.4%	61.6	12.8%
1940	62.9	5.4	60.8	4.6	65.2	5.8
1950	68.2	8.4	65.6	7.9	71.1	9.0
1960	69.7	2.2	66.6	1.5	73.1	2.8
1968	70.2	0.7	66.6	0.0	74.0	1.2

Source: U. S. Bureau of the Census, Statistical Abstract of the United States: 1971, (92d Edition), Washington, D. C., 1971. Adapted from Table 69, p. 53.

Are There Racial Differences in Life Expectancy?

If we compare the White with the Black populations during the same time period, we may note from Table 5.8 that while the increase in life expectancy for Blacks has been substantial, it still lags behind that of Whites.

Table 5.8 shows that life expectancy has increased for both Whites and Blacks since 1920. Between 1920 and 1968, life expectancy for Whites increased 29.5%. The increase for Blacks during the same time period was even greater. The life expectancy of a Black person in 1920 was 45.3 years. By 1968, this rose to 63.7 years, an increase of 40.6%. However, it is evident from Table 5.8 that the largest increases in life expectancy for both Blacks and Whites took place between the years 1920 and 1950.

While there was some additional increase in the eight years between 1960 and 1968, the rate of increase almost slowed to a standstill.

While the gains for Black people have been substantial, the statistics show that in 1968, Blacks were still 7.4 years behind Whites in life expectancy. The average life expectancy for a White person in 1968 was 71.1 years, for a Black person it was only 63.7 years.

TABLE 5.8

EXPECTATION OF LIFE AT BIRTH IN THE UNITED STATES
By Race - 1920-1968

Year	White	Percent Difference	Black	Percent Difference
1920	54.9		45.3	
1930	61.4	11.8%	48.1	6.2%
1940	64.2	4.6	53.1	10.4
1950	69.1	7.6	60.8	14.5
1960	70.6	2.2	63.6	4.6
1968	71.1	0.7	63.7	0.2

Source: U. S. Bureau of the Census, Statistical Abstract of the United States: 1971, (92d Edition). Adapted from Table 69, p. 53. Washington, D. C., 1971.

Sexual Differences in Life Expectancy

Both White and Black females outlived males in their respective racial groups by 7.4 years in 1968. Also, in 1968, White males outlived Black males by 7.4 years and White females outlived Black females by 7.4 years. These differences are shown in Table 5.9. Table 5.9 also shows the increase in longevity for each race by sex in the period between 1920 and 1968. While both men and women in both racial groups made significant gains during this forty-eight year period, Black females made the largest gains. Their average life span increased by 22.3 years, a 49.3% gain since 1920. The smallest increase in longevity was made by White males whose life expectancy increased 13.1 years, a 24.1% gain.

TABLE 5.9

LIFE EXPECTANCY AT BIRTH IN THE UNITED STATES
By Race and Sex
1920 and 1968

Year	White Male	White Female	Black Male	Black Female
1920	54.4	55.6	45.5	45.2
1968	67.5	74.9	60.1	67.5
Differences between 1920 and 1968:				
Difference in years	13.1	19.3	14.6	22.3
Percent difference	24.1%	34.7%	32.1%	49.3%

Source: U. S. Bureau of the Census, Statistical Abstract of the United States: 1971, (92d Edition). Adapted from Table 69, p. 53. Washington, D. C., 1971.

Life Expectancy Measures in the Eight Cities

Infant mortality. Each city provided trend data on infant mortality for at least the ten-year period between 1960 and 1970. Some confined their reporting to annual summary statistics, others disaggregated the data by homogeneous geographic subareas within the city. Both San Diego and Albuquerque provided subregional breakouts. In both cases, it was demonstrated that those areas of the community which contained large proportions of low-income families also had the highest rates of infant mortality while those with the highest incomes had the lowest rates of infant mortality.

An analysis of the data from Bernalillo County which contains the city of Albuquerque, showed that, at least for that area, the most urbanized regions within the county had lower infant mortality rates than nearby less urbanized counties. Marked differences in the infant mortality rates were found in the eight subregional areas within Bernalillo County. Areas characterized by poverty, low family income, inferior housing, and low scholastic attainment had the highest infant mortality rates.

Several cities disaggregated infant mortality data by race. In each, the Black minority population had infant mortality rates almost twice as high as those for the White population.

Since the total number of infant deaths is small, disaggregation by subregional area yields even smaller numbers. If the trends are shown as annual rates, these small numbers tend to fluctuate considerably yielding unstable rates. To control for this factor, the San Diego presentation of small area data was given as an average over three successive annual intervals. The Albuquerque Observatory averaged five consecutive years, yielding even more stable rates. As a rule of thumb, rates on a subregional basis should not be computed unless the deaths number at least twenty or more over a period of three to five years. Intervals longer than five years tend to produce other kinds of distortions related to the changing characteristics of neighborhoods. It is difficult to control for variations in the characteristics of the social composition of families who move into or out of specific areas of the community.

Infant mortality trends are least reliable if the subregional area within a city is in a state of transition. It can be predicted that if the transition is such that average family income declines as a result of the in-migration of low-income persons or the out-migration of high-income families, the infant mortality rate will go up. If, on the other hand, the transition is marked by out-migration of poor families and/or the in-migration of high-income families, it can be predicted that the infant mortality rate will drop.

If income data is available for subareas, a more reliable picture of the trends can be developed. However, such data is not usually available except during years in which the census is taken. Social surveys which include data on income during the intervening years could be used to correct for this factor. It might also be possible to use data on housing value as a substitute for the family income measure suggested above.

Other age-specific mortality information. The Nashville report calls attention to the important distinction between crude, or unadjusted mortality rates and age-specific or adjusted mortality rates. "Since mortality rates vary considerably for different age groups, it is important to adjust mortality rates for the age composition of the population. The crude mortality will increase for an aging population and decrease for a population that is getting younger even though there has been no basic change in mortality for given age groups."[21]

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[21] Nashville Quality of Life Report, unpublished draft, Nashville Urban Observatory, p. 126.

In the Nashville report, age-adjusted mortality data by race were only available for the State of Tennessee. Mortality data for Davidson County in which Nashville is located gave information by race for the crude, unadjusted rates only.[22]

The Albuquerque report was the only one which provided information for the death rates of age-specific populations. An analysis of this data was undertaken by the Albuquerque Observatory. Bernalillo County was divided into four socio-economic divisions, namely underdeveloped, transitional, most modern, and advanced transitional. Helen Potter, Coordinator of Health Research Services for the New Mexico Regional Medical Program, who did the analysis warned against characterizing urban communities as health or unhealthy since the overall status of health is influenced by the mobility characteristics of the population living within a given area. For example, if affluent and healthier people move out of the city and leave less healthy people behind, the statistics might tell us that the health of the remaining population is getting worse, when in fact, the less healthy residue might have experienced an improvement in health.

In her analysis of the death rates for children up to four years of age decreases were found in all four types of counties, indicating that health had improved in all the areas studied. However, she found that rates in the underdeveloped areas have started to rise again. She theorized that this reversal might be accounted for by the fact that persons in underdeveloped counties with better education and better social skills move out, leaving persons with poorer health behind. This may account for the apparent increase in the death rates for the residual population in this age group.

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[22] Ibid., p. 128.

Analysis of the death rates of persons seventy-five years of age and over, in Bernalillo County revealed a peculiar "cycling pattern." Random fluctuations from year to year were as much as 20%. "Consequently, one really needs seven years of data in order to know what the current health statistic is. That is, trends have to be analyzed not only to get a current picture but also to make future projections."[23] Potter regards the cycling phenomenon as especially significant in transitional areas since persons living in those localities "have . . . the greatest need for acute health care and yet do not have the personal resources to pay for it."[24]

Major causes of death. An important refinement of the overall mortality rate is the disaggregation of such information by principle causes of death. The Kansas City (Missouri and Kansas), Albuquerque, San Diego, and Nashville reports gave limited amounts of information on the principle causes of death in those cities. However, there were three major defects in the data presented. There was no uniform age-adjusted information on the major causes of death, no information on patterns of population mobility or uniform disaggregation of the highly aggregated major causes of death. Only Albuquerque provided age-adjusted information. In no case was information given on the length of residence of those who had died of various conditions. Since urban populations are highly mobile, it was difficult to infer from the data whether abnormally high rates for various illnesses leading to death were related to special ecological factors inherent in those communities.

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[23] Patrick H. McNamara, A Social Report for Metropolitan Albuquerque, The Second Year Report of the Social Indicators Project, The Albuquerque Urban Observatory, January 1973, p. 58.

[24] Ibid., p. 58.

Finally, the major causes of death are themselves highly aggregated and in very few cases was information given about specific causes of mortality. For example, when reports were given on malignant neoplasms the information was not disaggregated by type. Dr. Donald Ramros, Assistant Director of the San Diego Health Department, saw little value in reporting information on the total number of deaths from cancer. He suggested that an appropriate structure for social reporting on neoplasms would be to select out those conditions about which something might be done to reduce or prevent a particular type of cancer. He suggested, for example, that it might be very useful to develop trend data on the incidence of cancer of the cervix or of mammary cancers since early detection of these malignancies can result in dramatic reduction in death rates. Such information would provide a valuable tool for evaluating prevention programs sponsored by public and private health organizations.

Information on the principle causes of death was not sufficiently uniform to provide a basis for making useful intercity comparisons. Experiments with the presentation of such data has clearly revealed the need to provide age-adjusted information, information about length of residence and disaggregation of the major causes of death in order to yield meaningful information about any peculiarities which might characterize given communities.

The Albuquerque Observatory provided some interesting information which deserves reporting. Based upon their study of the risk of dying from undifferentiated heart diseases, they found that the most urbanized communities in Bernalillo County had the highest incidence of death from this cause. "Heart disease death rates . . . present a direct relationship to urbanization."[25] They also found that accidental deaths for persons seventy-five years of age and over occurred randomly, rather than with regularity and that most were from home accidents. Accidents in general for most age groups tend to be higher in underdeveloped areas of the county as compared with the more "modern" areas. "Higher accident death rates seem to be an initial price of modernization for underdeveloped peoples."[26] They concluded from this that as people become more urbanized they learn how to handle the tools of modern technology more safely. In general, as individuals become better educated and improve their general living conditions, accident rates go down.[27]

Death from cirrhosis of the liver increased for all age groups between 1960 and 1970 but was highest in the more urbanized areas leading the author to predict that cirrhosis of the liver is a health problem primarily related to urban stress. This problem promises to get much worse since "more people than in the past are becoming alcholic in the younger age groups."[28]

Morbidity data. Most of the Observatory effort in developing health indicators was focused on mortality data, especially infant mortality. However, some Observatories provided information on morbidity, that is, on the incidence of sickness and disease. Thus, Kansas City (Kansas and Missouri) provided time series on selected diseases such as mumps, rubella, hepatitis, tuberculosis, gonorrhea, syphilis, and pneumonia giving information on each in rates per 100,000 per population. As with data on mortality, only the crude rates were given; there were no age-adjusted refinements. Thus, it was not possible to compare the Kansas City community with others nor was it possible to provide accurate information on trends over time for various age groups within the Kansas City community.

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[25] Ibid., p. 58. [26] Ibid., p. 59. [27] Ibid., p. 66.

[28] Ibid., p. 74.

A Strategy for Collecting Health Indicators at the Community Level

It is obvious from the presentation in this chapter that the Observatory indicator effort in the health area was largely confined to collecting information on trends in infant mortality. It is also obvious that while such information is interesting, it has only limited utility in defining the health status of communities. At best, it is only a partial measure of the health status of infants and the differential experiences of minority and low-income persons with respect to the survival chances of new born babies. Additional age-adjusted mortality as well as morbidity data will be required to provide a comprehensive and balanced assessment of community health status. This can only be partially accomplished by utilizing and perhaps upgrading existing sources of health information collected at the local level. The most desirable strategy would be to utilize the measurement tools already developed by the National Center for Health Statistics, a Federal agency with authority to conduct surveys to determine the health status of the population of the United States, an authority conveyed under the National Health Survey Act of 1956 by the 84th Congress.

Three different programs are currently being utilized by the National Center for Health Statistics to accomplish its objectives. The Health Interview Survey (HIS) conducts continuous sampling of civilian, non-institutionalized population of the United States in order to obtain information on the personal and demographic characteristics of those interviewed and their illnesses, injuries, impairments, chronic conditions and other health circumstances. The Health Resources Statistics Division "obtains data on health as well as health resources and utilizes information through surveys of hospitals, nursing homes, and other resident institutions and the entire range of personnel in the health occupations."[29] The Health Examination Survey "collects data by direct physical examination tests and measurements performed on samples of the population . . ."[30] The Health Examination Survey is designed to secure information on undiagnosed conditions as well as on a variety of physical, physiological and psychological conditions within the population.

These programs, under the direction of the United States Public Health Survey provide excellent monitoring of the health status of the entire population but, since the national samples are so small, disaggregation of the data by region is limited to very large areas. It would be highly desirable if modified versions of this national data taking effort could be applied to smaller communities. The Health Interview Survey has, in some instances, been applied to small populations living in low-income areas under the auspices of the Model Cities Program, for example. It would be useful if Health Departments in local communities could have resources made available to them to conduct a modified version of the Health Interview Survey at intervals of about three years. Initial samples could be limited to perhaps five hundred with provisions for oversampling populations where there was some evidence that selected types of morbidity were in excess of the rates for the community as a whole. Ideally, it would be valuable to supplement the Health Interview Survey with a local Health Examination Survey. Perhaps this could be done in conjunction with a voluntary program undertaken privately by the local health department and the medical society. Base line data is now available on a wide variety of health conditions at the national level. The local surveys which are suggested would make it possible to compare selected community conditions with known national parameters. Health prevention programs could then be deliberately devised to correct aberrant local conditions which require reduction or amelioration. Determination of variables to be included in the interview and examination surveys could be made by local health departments working closely with representatives of organized medicine and consumer groups.

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[29] U. S. Department of Health Education and Welfare, Public Health Service, Health Resources Administration, "Examination and Health History Finding Among Children and Youths, Six to Seventeen Years," U. S. PHEW publication, Number HRA 74-1611, November 1973, p. 1.

[30] Ibid., p. 1.

Chapter 6

EDUCATION INDICATORS

Introduction

It is difficult to measure the quality of education since there is very little agreement about the goals of education. There is a basic conflict among educators concerning where the emphasis in education should be placed. One school holds that knowledge dissemination is no longer the exclusive property of formal educational institutions since more and more information is being disseminated by other means.

Video-tape home systems are being mass marketed and pre-recorded tapes for leisure time home instruction are now available. These can be bought outright or can be rented for a nominal fee. New developments in cable television are also moving in the direction of semi-privatized instruction. In addition, it is now possible to purchase home study courses coded on cassette audio tapes. As a consequence of these new developments, it has been argued that the job of formal education should be limited to giving students the cognitive skills to handle all information coming from many sources.[1]

Herbert Simon has made a strong argument for having the educational establishment focus its main effort on teaching cognitive skills instead of continuing the treadmill pattern of simply transmitting prescribed capsules of traditional subject matter.

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[1] National Goals Research Staff Report, Toward Balanced Growth: Quantity with Quality, Washington, D. C., July 4, 1970, U.S. Government Printing Office, pp. 79-101.

> . . . at every convocation, we describe to our graduating students the world of incessant and accelerating change that they are entering, a world in which their knowledge will soon be obsolete unless learning continues. If we believe what we say in such addresses, that helping the student learn subject matter or specific skills is unimportant, helping him to acquire the skill of independent learning is all-important. If we act on our beliefs and give more than lip service to the goal of life-long learning, then learning to learn, instead of learning subject matter, will become the central objective of almost every college course.[2]

Opponents of this view argue that even if institutions place more emphasis on problem-solving tasks, they would still be far from meeting the requirements of a rapidly changing society. Schools would not provide experience in the "real world."

> Throughout man's history, . . . experience has been a major factor in both the cognitive and social development of youth. Only in the last century has our society isolated young people from such experience by increasing the number of years they spend in school and by extending their period of dependence.[3]

Dissatisfaction with the goals as well as the results of our educational system surfaced in the 1960s and rose to a crescendo in the student disruptions of that decade. The National Goals Research Staff attributed this dissatisfaction to the inability of the educational establishment to change its purposes in line with the changed conditions of the society.[4]

It is this conflict over goals which makes it difficult for those interested in developing educational indicators to measure the quality of current educational outputs. Numerous suggestions have been made about how to measure this elusive dimension.[5] It has been suggested that educational quality can be measured indirectly by calculating per capita costs of education, by recording student performance on standardized tests, by weighing the educational achievement of teachers, by counting the number of school dropouts and by other such easily available data. Such measures have, however, been criticized for many reasons. Some are "input" measures which do not directly yield information about quality; and the qualitative measures have been criticized because of their inadequacy or inappropriateness.

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[2] H. A. Simon, "The Job of a College President," Carnagie Institute of Technology, Graduate School of Industrial Administration, Reprint No. 304, 1967.

[3] George A. Pettit, Prisoners of Culture, Scribners, N. Y., 1970.

[4] Op. cit., National Goals Research Staff Report, pp. 79-101.

The problem of developing useful output measures will not be resolved until there is more clarity about the goals and purposes of education. It is highly unlikely that a single measure of quality will ultimately be found, just as it is unlikely that a single measure of community welfare will ever be found. As an approach to resolving the problem of reporting on the educational quality of local institutions, suggestions put forward by Amitai Etzioni, a sociologist at Columbia University, will be followed in this section.

Etzioni suggested that the world's nations can be ordered on a continuum which he calls "knowledge power." In the past, the power potential of societies was measured by the size of their populations, by their level of industrial productivity, by their capacity to manage large scale technology, etc. In measuring the knowledge power of nations, Etzioni suggests that we now ask "how many engineers, scientists, professionals, or highly educated persons one country has as compared to another.[6]

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[5] For a review of the Social Indicators literature which refers to educational measurement, see Chapter 4 in Robert Ontell's Toward a Social Report for the City of San Diego, Urban Observatory of San Diego, March 1972, pp. 66, 72-107.

Etzioni has, in addition, identified other components of the knowledge power of nations. These include the percentage of the population that has graduated from higher educational institutions, the amount of money spent on the knowledge industry (especially on research and development), the relative size of the knowledge power sector as compared to total manpower, total governmental expenditures invested in education as a percentage of the Gross National Product, and the proportion of the educational investment allocated to applied and basic research.[7]

Etzioni's novel suggestions for ranking nation states on these dimensions of knowledge power suggests the possibility that communities within a nation may also be ranked on this dimension. Indeed, Etzioni, in a passing comment, says ". . . We would like to stress that similar indicators can be used for smaller units such as corporations and communities."[8]

An attempt will be made in this chapter to develop a set of rough measures of the knowledge power of local communities. Not enough is presently known about which of many possible components such a concept will ultimately include. What is established is that communities characterized by high median levels of education, high proportions of high school and college graduates also tend to have high levels of income.

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[6] Amitai Etzioni, "Indicators of the Capacity for Societal Guidance," The Annals of the American Academy of Political and Social Science, The American Academy of Political and Social Science, March 1970, Vol. 388, p. 26.

[7] Ibid., pp. 26-31. [8] Ibid., p. 28.

It is a well known fact that persons with more education can expect higher aggregate income levels over a lifetime than those with less education. In 1966, for example, the average college graduate could expect a lifetime income of approximately $540,000. The average high school graduate that year could expect a lifetime income of approximately $340,000 and those who dropped out of school after completing the eighth grade could anticipate lifetime incomes of about $240,000, which comes to $300,000 less than the average college graduate could expect to earn.[9]

In 1968, the median annual income of college graduates was almost $11,300; for high school graduates, annual income averaged about $7,700; and for elementary school graduates, the average was $5,100.[10]

Communities with a high level of knowledge power, in addition to having higher income levels, have also been characterized by higher levels of productivity. Higher productivity plus higher incomes results in increased community resources available for financing the public sector of community services.[11]

Measures of Knowledge Power in the Eight Cities

To assess knowledge power in the eight Observatory cities, several crude measures were employed. Table 6.1 contains information on the educational levels of adults, twenty-five years of age and over for each city. These data were taken from the 1970 census and give information on median school years completed, percent of high school graduates, the proportion of those who completed four or more years of college and the percentage of those with varying degrees of lesser education.

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[9] U. S. Department of Health, Education and Welfare, Digest of Educational Statistics, 1970 Edition, Washington, D. C., U. S. Government Printing Office, p. 1.

[10] Ibid., p. 1.

[11] J. D. Kitchen, W. R. Bigger and G. Babilot, A Study of Local Government Finances in the San Diego S.M.S.A., Urban Observatory of San Diego, June 1972, p. 103.

Median school years completed. The median is that point in a distribution above or below which 50% of the population falls. In the United States in 1970, median school years completed for those twenty-five years of age and over was 12.2. This means that 50% of that population had more than 12.2 years of schooling and 50% had less than 12.2 years of schooling. Table 6.1 shows that of the eight cities, four fell below the median, three were above the median and Kansas City, Missouri, was at the median with 12.2 years of school completed. The range for median education was between 11.5 years for Atlanta, which had the lowest median and 12.6 years for Albuquerque which had the highest median. While the range was only a little more than one year (11.5 to 12.6), this discrepancy is quite large when we observe the percentages of those who have completed four or more years of college and when we compare the percentage of high school graduates in each community.

Percent of high school graduates. Atlanta, which had the lowest level of median school years completed, had the lowest percentage of high school graduates among those twenty-five years of age and over (46.5%). Albuquerque, which had the highest median of school years completed and percent of high school graduates shows that there is a one-to-one rank order correspondence between these two variables. If we rank the cities by median school years completed from high to low we get precisely the same ranking order that we do when we rank the cities according to percent of high school graduates. The percentages of high school graduates in the population twenty-five years and older varied from 70.7% for Albuquerque, to 46.5% for Atlanta, a difference of 24.2%.

Table 6.1

EDUCATIONAL ATTAINMENT OF ADULTS (25 YEARS OLD AND OVER)
BY CITY - PERCENT (Years of School Completed)
1970

Years of School Completed	Albuquerque	Atlanta	Denver	Kansas City Missouri	Kansas City Kansas	Milwaukee	Nashville	San Diego
Number of Persons 25+ yrs.	122520	265442	286332	285544	89825	390480	24337	356263
No Schooling	1.0	1.8	1.1	0.9	1.0	1.3	1.6	1.1
Elem. 1-4 yrs.	2.6	7.2	2.3	2.7	3.3	2.9	4.5	2.1
5-7 yrs.	5.2	14.6	6.7	8.9	11.3	9.4	11.0	5.6
Less than 8 yrs.	8.8	23.6	10.1	12.5	15.6	13.6	16.1	8.8
8 yrs.	6.9	7.3	11.1	12.1	15.6	16.8	12.0	7.7
H.S. 1-3 yrs.	13.6	22.6	17.2	19.5	21.8	20.4	20.1	17.3
4 yrs.	34.3	22.6	31.9	33.8	31.6	32.8	28.8	33.7
College 1-3 yrs.	17.4	10.9	14.0	12.0	8.8	9.0	9.9	16.7
4+yrs.	19.0	13.0	15.5	10.1	6.6	7.4	12.1	15.8
Median School yrs. completed	12.6	11.5	12.4	12.2	11.6	11.9	12.0	12.5
% of H.S. Graduates	70.7	46.5	61.5	55.9	47.0	49.2	50.8	66.2

Source: 1970 U. S. Census.

For the United States at the time of the 1970 census, 54.2% of those twenty-five years and over, graduated from high school. Thus, we see that four of the eight cities (Atlanta; Kansas City, Kansas; Milwaukee; and Nashville) had a smaller percentage of high school graduates than was true for the nation and four cities (Kansas City, Missouri; Denver, San Diego; and Albuquerque) exceeded the national percentage of high school graduates.

College completion rate. Perhaps one of the most important knowledge power measurements is the percentage of those who completed four or more years of college. At the time of the 1970 census, only 11% of the United States population, twenty-five and over, had achieved that level of education. Kansas City, Kansas, was lowest on this measure with only 6.6% of its twenty-five and over population included in this group. Albuquerque, which was highest on median school years completed and percent of high school graduates, was also highest in the percentage of college graduates (19%). Three cities (Kansas City, Missouri; Kansas City, Kansas: and Milwaukee) had a lower percentage of college graduates than was true for the nation. Four cities (Albuquerque; San Diego; Denver; Atlanta; and Nashville) had percentages of college graduates which exceeded the national level. Percentages from high to low ranged from 6.6% in Kansas City, Kansas, to 19.0% in Albuquerque.

Other measures. Consistent with the information previously given, Atlanta, Nashville, and Kansas City, Kansas, which ranked low on median school years of education and percent of high school graduates ranked highest in the percentage of those with less than eight years of schooling. In the twenty-five years and older population, Atlanta had 23.6% with less than eight years of education; Nashville had 17.1% and Milwaukee and Kansas City, Kansas, had 15.6%. Only 8.8% of the Albuquerque and San Diego populations, of those twenty-five and over, had less than eight years of schooling. Atlanta which was low on all other variables had a relatively high percentage of college graduates. This is probably attributable to the fact that Atlanta, since the Reconstruction Period, has been a center for higher education for Blacks.

The high school dropout rates, those with one to three years of high school education, are also of ineterest. Again, Atlanta, Kansas City, Kansas, and Milwaukee ranked first (22.6%), second (21.8%), and third (20.4%) in the number of high school dropouts while Albuquerque with 13.6% and Denver with 17.2% followed by San Diego with 17.3% had the lowest percentage of high school dropouts.

Table 6.2 summarizes the relative ranking of the cities on five variables. On the basis of the data given, Albuquerque, San Diego, and Denver ranked high on knowledge power, and Kansas City, Kansas, Milwaukee and Atlanta, with the exception noted ranked low on knowledge power. These are, of course, arbitrary designations since there is as yet no absolute standard against which the cities can be compared.

Educational Attainment by Race

Table 6.3 gives information on median school years completed for the White and non-White population of the United States over the span of years extending from April 1950 through March 1970.

TABLE 6.2

RANK ORDER OF THE EIGHT CITIES ON EDUCATIONAL ATTAINMENT

City	Median School Years Completed High to Low	Percent High School Graduates High to Low	Percent College Graduates High to Low	Percent High School Dropouts Low to High	Percent with Less than Eighth Grade Education Low to High
Albuquerque	1	1	1	1	1.5
San Diego	2	2	2	2	1.5
Denver	3	3	3	3	3
Kansas City, Missouri	4	4	6	4	4
Nashville	5	5	5	5	7
Milwaukee	6	6	7	6	5
Kansas City, Kansas	7	7	8	7	6
Atlanta	8	8	4	8	8

Source: Derived from Table 6.1

TABLE 6.3

YEARS OF SCHOOL COMPLETED BY AGE AND RACE
UNITED STATES, 1950-1970
(PERCENTAGES)

	Less than 5 Years of Elementary School	4 Years of High School or More	4 or More Years of College	Median School Years Completed
White and Non-White, 25 Years and Over:				
March 1970	5.3	55.2	11.0	12.2
March 1965	6.8	49.0	9.4	11.8
March 1964	7.1	48.0	9.1	11.7
March 1959	8.0	42.9	7.9	11.0
March 1957	9.0	40.8	7.5	10.6
October 1952	9.1	38.4	6.9	10.1
April 1950	10.8	33.4	6.0	9.3
25 to 29 Years:				
March 1970	1.1	75.4	16.4	12.6
March 1965	2.0	70.3	12.4	12.4
March 1964	2.1	69.2	12.8	12.4
March 1959	3.0	63.3	11.0	12.3
October 1952	3.8	56.7	10.0	12.2
April 1950	4.6	51.7	7.7	12.1
April 1940	5.9	37.8	5.8	10.4
Non-White, 25 Years and Over:				
March 1970	15.1	33.8	4.5	9.9
March 1965	18.4	28.6	5.5	9.0
March 1964	18.6	27.5	4.7	8.9
March 1959	23.5	20.0	3.2	8.1
March 1957	26.9	17.8	2.8	7.7
October 1952	30.3	14.7	2.4	7.1
April 1950	31.5	13.2	2.2	6.8
25 to 29 Years:				
March 1970	2.5	56.1	7.3	12.2
March 1962	6.1	41.6	4.2	11.2
March 1959	7.8	39.1	4.6	10.9
October 1952	15.2	27.8	4.6	9.3
April 1950	15.6	22.9	2.8	8.7

Sources: U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, 1971, Table 165, p. 110.

U. S. Department of Commerce, Bureau of the Census, "Current Population Report," Series P-20, Nos. 99, 121, 138; Series P-19, No. 4.

In April 1950, the median school completion rate for non-Whites was 6.8 years as compared with 9.3 years for the entire population. The discrepancy was 2.5 years. In March 1970, the figures were 9.9 years for non-Whites and 12.2 years for the entire population; a discrepancy of 2.3 years. In other words, while both Whites and non-Whites had gained in median school years completed, the gap between the two groups was about the same after twenty years. However, if we focus attention on those who were between twenty-five and twenty-nine years of age in March 1970, we notice a rather remarkable change. Non-Whites twenty-five to twenty-nine years of age in 1970, that is, those born between 1941 and 1945 had a median school year completion rate of 12.2 years as compared with 12.6 years for the entire population. The discrepancy in median school years completed for this age group was only 0.4 years. Furthermore, most of the gain took place during the decade of the 1960s. Compare this with March 1959, when the gap between Whites and non-Whites was 1.4 years. In March 1959, median achievement for non-Whites in the twenty-five to twenty-nine years age group was 10.9 years of education; for the White population it was 12.3 years.

Table 6.3 shows similar recent progress on three other key dimensions. Non-White illiteracy, which in April 1950, was 31.5% for those twenty-five years and over, decreased by half by March 1970, to 15.1%. Even at that, the proportion of non-Whites with less than five years of elementary school education was three times that of the entire population. However, if we consider only that portion of the non-White population between ages twenty-five and twenty-nine years, only 2.5% had less than five years of elementary school education in 1970. While this was still high, it represented a six-fold decrease since 1950.

Non-Whites still have a long way to go to achieve the high school and post-high school educational levels characteristic of the entire population. In March, 1970, 56% of non-Whites (ages twenty-five to twenty-nine) had four or more years of high school education as compared to 75.4% in the population as a whole.

Both Whites and non-Whites benefited from the rapid expansion of college education in the decade of the 1960s. However, Blacks were still behind. Only 7.3% of the non-White population, twenty-five to twenty-nine years of age, had achieved four or more years of college as compared to 16.4% of those in the same age bracket in the nation as a whole.

It is not only race, but low-income (and very often these go together) which acts as a barrier to access to higher education.

> . . . only half of those who are in the top ability quintile, but from families in the lowest socio-economic quartile, go to college, whereas 95% of the equally able students from the top socio-economic quartile go to college. Socio-economic status also has a major effect on college attendance at other ability levels.

The disadvantage of being non-White is compounded by the low-income characteristics of that sector of the population.

Despite these barriers, Black student enrollment in the nation's colleges has increased since 1968 at a rate four times greater than the rate for White students.

Total Black student enrollment increased from 303,397 in 1968 to 379,138 in 1971, an increase of 24%. During the same period, the White college population rose from 4,809,300 to 5,100,000,an increase of only 5.7%. These figures are shown in Table 6.4.

TABLE 6.4

COMPARATIVE COLLEGE ENROLLMENT BY RACE
1968 AND 1971

	1968	1971	Percent Increase
Black	303,397	379,138	24.0%
White	4,809,300	5,100,000	5.7

While these gains are impressive, it must be noted that the Black college population is only 6.6% of the total undergraduate college population in the United States. Blacks constitute about 11% of the United States population. The combined minority enrollment, including Blacks, Spanish-surnamed, Asian Americans and Native Americans, comprises little more than 10% of the total student enrollment. Table 6.5 gives information on the ethnic breakdown of college enrollment.

TABLE 6.5

ETHNIC BREAKDOWN OF U.S. COLLEGE ENROLLMENT
1971

Total College Enrollment	5,700,000
Total White Students	5,100,000
Total Minority Students	573,138
Blacks	379,138
Spanish	111,000
Asian Americans	64,000
Native Americans	29,000

Of the 379,138 Blacks, approximately 44% of the undergraduates were in colleges which had Black student majorities.

Educational Attainment of Blacks in the Eight Cities

Figures 1, 2, and 3 give information on the educational attainment of Blacks who were twenty-five years of age and over at the time of the census in 1960 and 1970. The number of Blacks in this age category varied from a low of 2,233 in Albuquerque to a high of 118,949 in Atlanta. Despite the variation in number and percentage of Blacks in each community and the fact that some cities declined in Black population and others gained, median school years completed by Blacks increased in each community in the decade 1960-1970.

The largest relative gain was in Atlanta where median school years completed increased from 7.9 in 1960 to 10.1 in 1970, a 28% rise. The lowest rate of improvement was in Denver, where the median increased from 11.2 in 1960 to 12.1 in 1970, a gain of 8%. However, it should be noted that by 1970 in the three western cities (Albuquerque, Denver, and San Diego) Blacks had the highest levels of median school years completed and were well on their way to achieving parity with Whites. Thus, for example, median school years for the entire city population in Denver was 12.4 years in 1970. For Blacks, it was 12.1 years. Blacks in Atlanta made substantial gains during the decade of the sixties, however, among the eight cities, Atlanta and Nashville had the lowest levels of school years completed by Blacks, 10.1 and 9.8 respectively.

FIGURE 1

MEDIAN SCHOOL YEARS COMPLETED
BLACKS 25 YEARS OF AGE AND OVER - 1960-1971

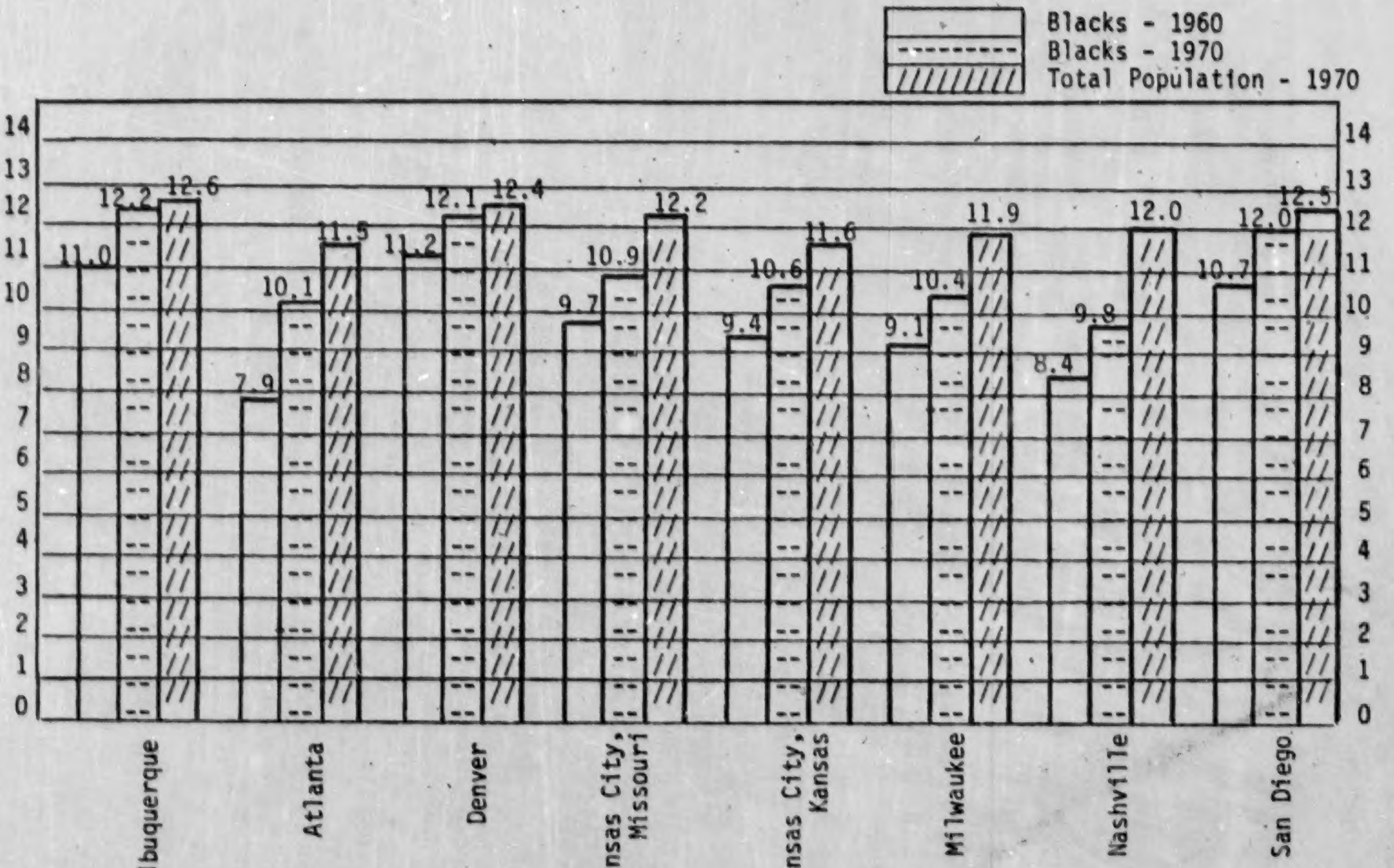


Figure 2 shows how the improvement in median school years for Blacks was reflected in the increase in the percentage of high school graduates during the 1960-1970 period. In 1970, Albuquerque, Denver, and San Diego had the largest percentages of Black high school graduates --55.5%, 54.1%, and 51.0% respectively. Nashville, Milwaukee, and Atlanta had the lowest percentages of high school graduates among Blacks, 32.3%, 33.8%, and 34.1% respectively. It should be noted, however, that substantial progress was made in all of the cities surveyed. It should also be noted that in 1970, Blacks still had a long way to go to achieve parity with Whites. This was also true with respect to percent of college graduates.

Figure 3 gives information on the percentage of Blacks who graduated from college among those twenty-five years of age and over. Considerable progress was made in most of the eight cities during the ten-year interval between 1950 and 1960. The greatest gains were made in Albuquerque and Atlanta. In Albuquerque, the percentage of college graduates rose from 5.9% to 11.5%. In Atlanta, the increase was from 3.8% to 6.7%. In 1970, Albuquerque, Nashville, and Denver had the largest percentages of college graduates among Blacks--11.5%, 8.1%, and 6.9% respectively. Milwaukee, Kansas City, Missouri, and San Diego had the lowest percentages of Black college graduates among those twenty-five years of age and over. The respective percentages were 3.5, 4.7, and 4.9.

FIGURE 2

PERCENT HIGH SCHOOL GRADUATES
BLACKS 25 YEARS OF AGE AND OVER
1960-1970

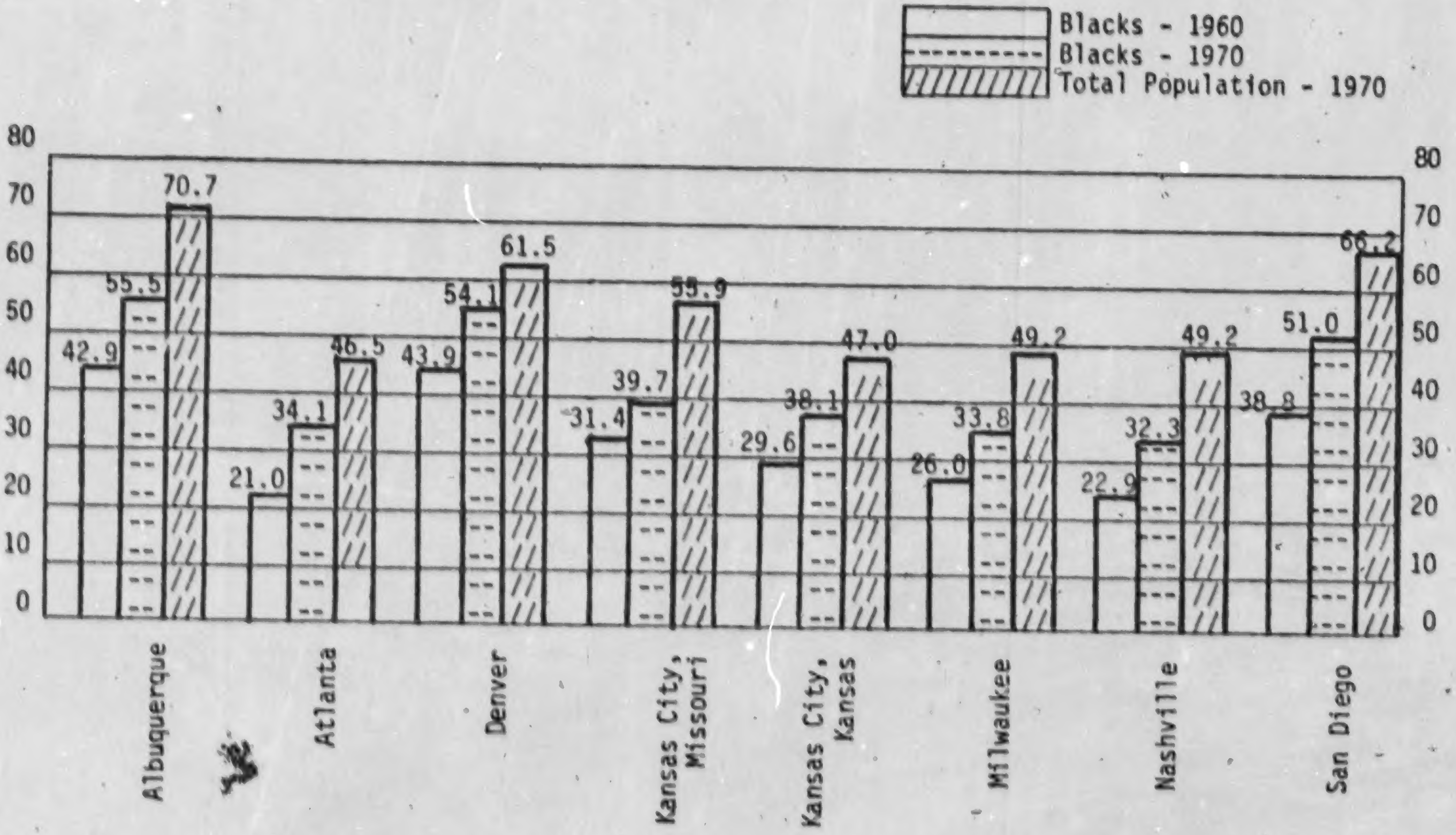
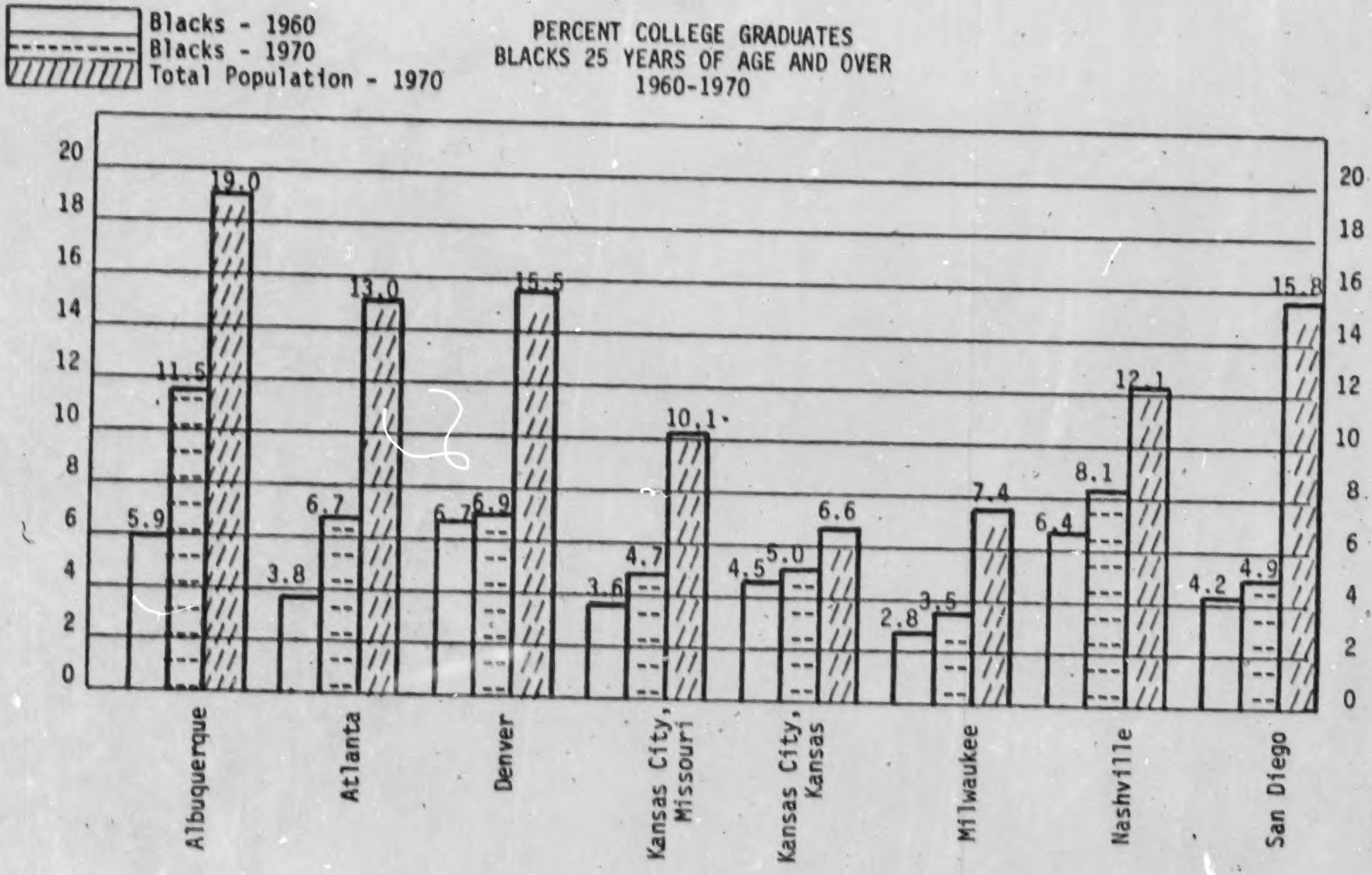


FIGURE 3

PERCENT COLLEGE GRADUATES
BLACKS 25 YEARS OF AGE AND OVER
1960-1970



Educational Attainment of Hispanic Americans Twenty-five Years of Age and Over in Albuquerque, Denver, and San Diego--1960-1970

Figures 4, 5, and 6 provide information on the educational attainment of Hispanic Americans twenty-five years of age and over in the cities of Albuquerque, Denver, and San Diego for the census periods 1960-1970. The three cities selected had the largest concentrations of Hispanic Americans among the eight cities studied. The educational attainment of Hispanic Americans in 1970 for this population group is also compared to the educational attainment of the entire population in each community.

As with Blacks, Hispanic Americans registered significant gains in median school years of education, percentage of high school graduates and percentage of college graduates when 1960-1970 comparisons were made. The most substantial gains were made by Hispanic Americans residing in Albuquerque. Median school years increased from 9.1 in 1960 to 12.0 in 1970, a gain of 34%. However, when Hispanic Americans are compared with Blacks on median school years of education for that community, Hispanic Americans are still somewhat behind Blacks although their rate of progress since 1960 has been more rapid. Like Albuquerque, Hispanic Americans in Denver had a rather low level of median school atainment in 1960--8.6 years. While some progress was made, it was not as substantial as the improvement registered in Albuquerque. In 1970, Hispanic Americans in Denver had only 10.0 years of median education as compared with 12.0 years in Albuquerque and with 12.1 years for Blacks in Denver. Hispanic Americans in San Diego also registered progress, but again, it was not as substantial as the gains made in Albuquerque but was better than the improvement registered in Denver. In no case in 1970 did the median school years of education of the Hispanic population equal that of Blacks or of the population in general.

Hispanic Americans had relatively low percentages of high school graduates among those twenty-five years and over. However, Figure 5 shows that substantial gains were made between 1960 and 1970 in the three communities studied. Of the three cities, Denver had the poorest performance and although significant gains were made, the percentage of high school graduates among Hispanic Americans in that city was substantially below the average for the population. In 1970, 33.6% of the Hispanic population twenty-five years of age and over were high school graduates as compared with 61.5% for the population in the city as a whole. When the percentage of Hispanic high school graduates in the three cities was compared with the percentage of Blacks who are high school graduates, the data showed that in all three cities, Hispanic Americans were behind Blacks on this variable. However, when the rate of progress of Blacks and Hispanic Americans was compared, Hispanic Americans were found to have had made more rapid progress than Blacks in all three communities.

Figure 6 provides information on the percentage of Hispanic American college graduates in the age group twenty-five years and over. Again, the data shows that substantial progress was made during the decade. However, the proportion of such graduates is substantially below the average for the population in the community studied, thus, for example, 7.1% of Hispanic Americans in the twenty-five year plus age group were college graduates as compared with 19% in the total population of Albuquerque. In all three cities, the percentage of Hispanic American college graduates was substantially below the percentage of Black college graduates. Thus, for example, 3.9% of Hispanic Americans, twenty-five plus years and over, in Denver were college graduates as compared with 6.9% of Blacks in the same age group.

In summary, Hispanic Americans have made considerable progress in improving their educational attainment levels since 1960. Indeed, they have made more rapid relative progress than the Black minorities in the communities which were compared. However, they still had a substantial distance to go to achieve the educational level of Blacks. Both groups were still substantially behind Whites on the dimensions compared. Data at the national level, however, indicates that in the twenty-five to twenty-nine year age group, the educational gap between the minority populations and the majority Anglo population is rapidly decreasing.

Rates of Functional Illiteracy in Three Cities

Figure 7 gives information on the comparative rates of illiteracy of Blacks and Hispanic Americans for the years 1960 and 1970 for the cities of Albuquerque, Denver, and San Diego. The dotted lines indicate the level of illiteracy for all adults twenty-five years of age and over in those communities for the year 1970.

The figure clearly shows that illiteracy rates for both Blacks and Hispanic Americans declined substantially in all three cities over the ten-year period. The largest decline was for Hispanic Americans in Denver where the illiteracy rate dropped from 19.5% to 11.0% in 1970. The second largest relative decline was for Hispanic Americans in San Diego where illiteracy dropped from 17.4% to 11.8% during the ten-year period. Among Blacks, the most substantial decline was for those living in Albuquerque where the drop was from 10.3% to 4.9%.

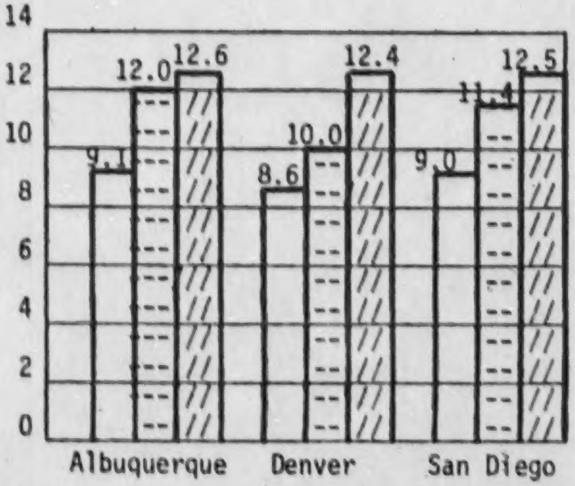
FIGURE 4

MEDIAN SCHOOL YEARS OF HISPANIC POPULATION
25 YEARS OF AGE AND OVER
1960-1970

FIGURE 5

PERCENT HIGH SCHOOL GRADUATES
HISPANIC POPULATION 25 YEARS AND OVER
1960-1970

□ Hispanic - 1960
▤ Hispanic - 1970
▨ Total Population - 1970



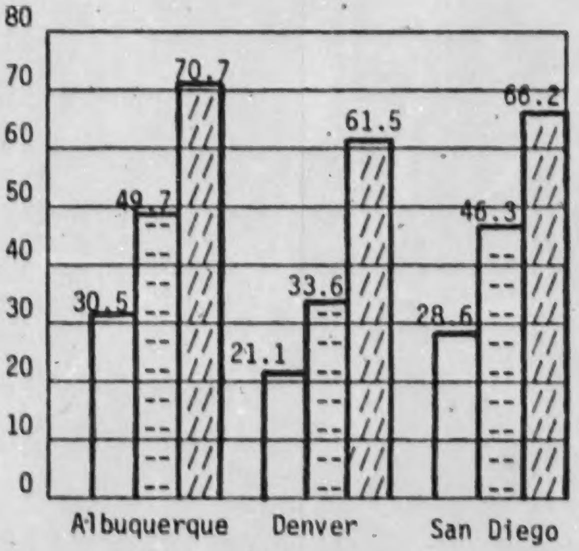


FIGURE 6

PERCENT COLLEGE GRADUATES
HISPANIC AMERICANS 25 YEARS OF AGE AND OVER
1960-1970

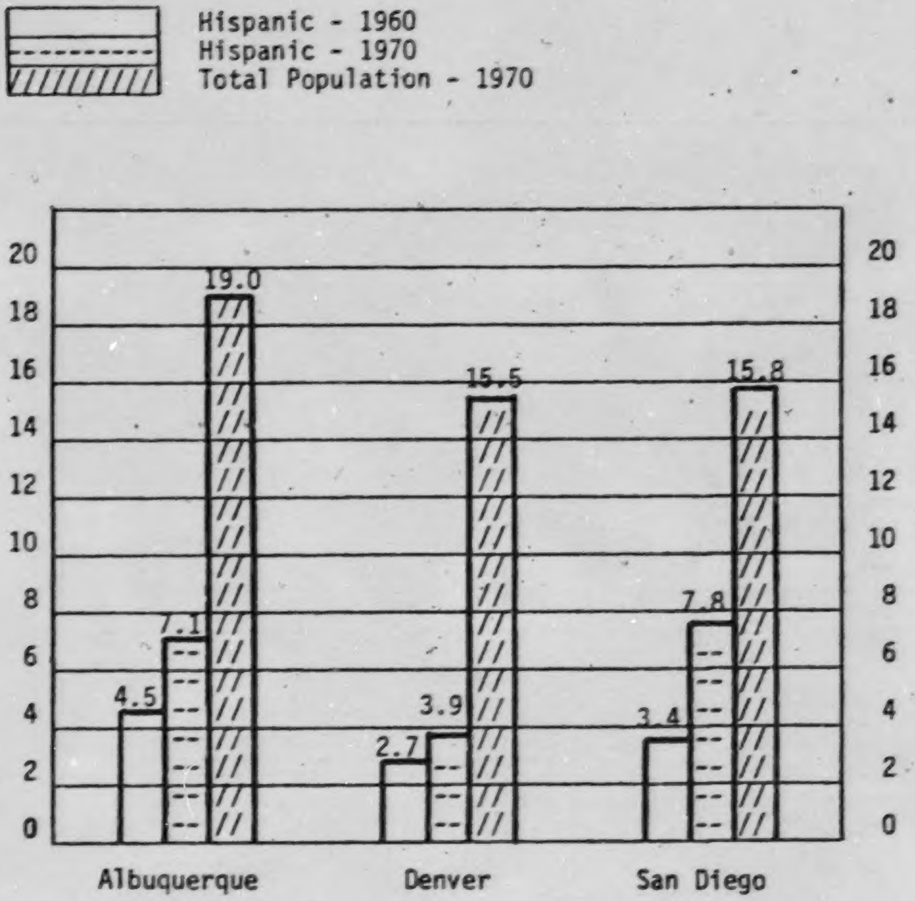
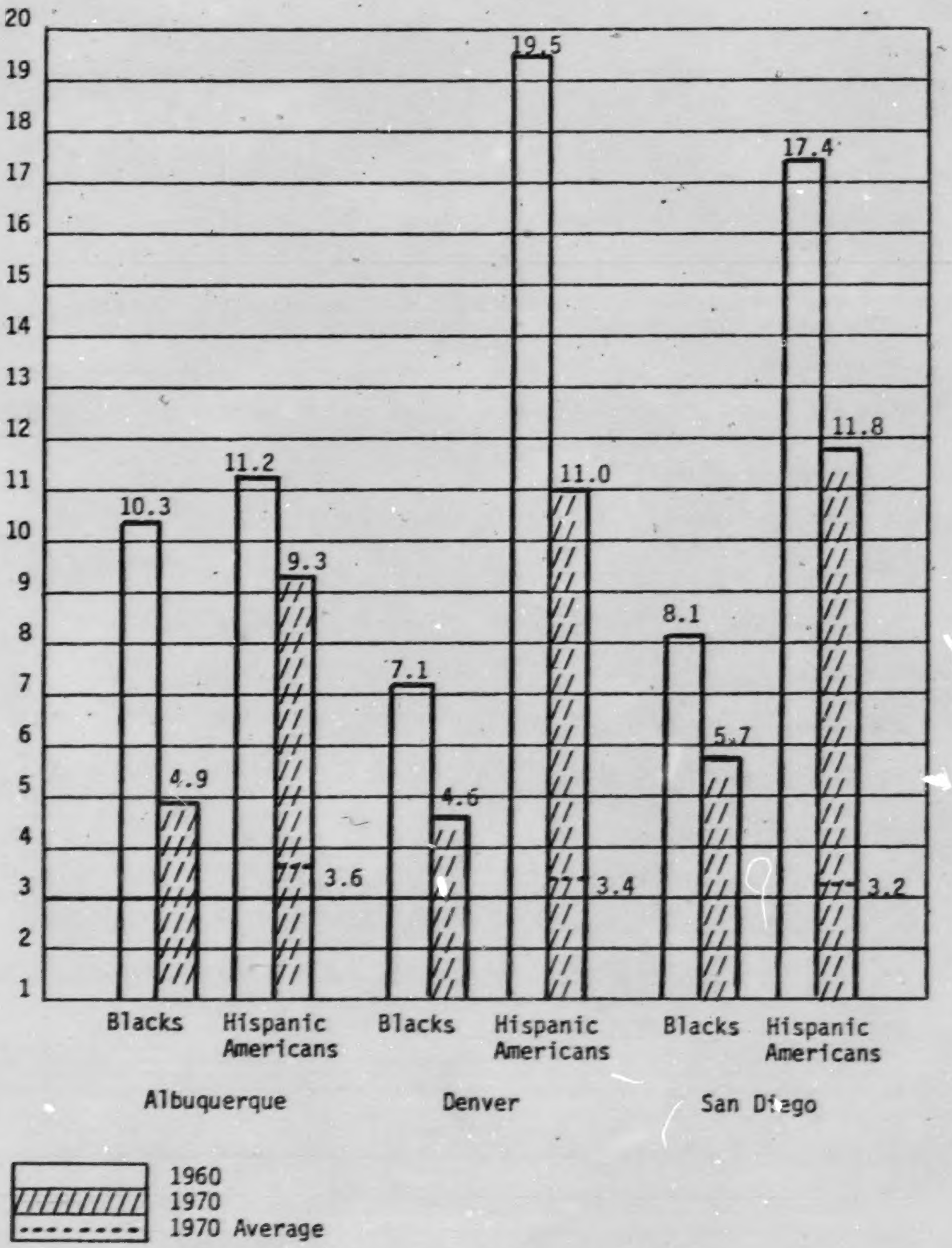


FIGURE 7

PERCENT ILLITERACY IN ALBUQUERQUE, DENVER, AND SAN DIEGO
BLACKS AND HISPANIC AMERICANS 25 YEARS OF AGE AND OVER
1960-1970



In the three cities compared, illiteracy rates for Blacks were consistently below those for Hispanic Americans for both census periods. In Albuquerque and Denver, illitaracy rates for Blacks closely approached the average for the general population among those twenty-five years of age and over.

Educational Progression and Educational Achievement

The data thus far presented are primarily concerned with educational completion rates, that is, with the reported temporal progress of individuals who are processed through the educational establishment. Measures of simple progression given by the rates of those who are "credentialed" at key points in the system, (graduation from grammar school, high school and college) provides poor information about the level of educational mastery acquired by sojourners through the system. There are increasing numbers of complaints that students who are processed through to the high school level, and whose graduation is certified, may nevertheless be functionally illiterate. Objective measurements of achievement, in addition to statistics on progression, are required to provide a complete picture of the knowledge power of the "educated community."

Flaming and Newbrough have suggested that the educational system be viewed as a processing unit and that key indicators be developed to measure the system's effectiveness in achieving its stated goals.[12] Thus, there would be measures of the material inputs into the system (cost per pupil) performance measures (I.Q. and other tests), by products (dropouts) efficiency measures (graduate/dropout ratios), system power (performance on entry compared with performance on exit) and consumer experience (value of education viewed retrospectively by former participants). McNamara has commended this approach as having considerable merit since it places specific indicators "within an overall processing system and provides criteria by which to judge the effectiveness of the system as a whole."[13]

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[12] Carl Flaming and J. R. Newbrough, "Flow-Model of Educational Indicators," in Patrick H. McNamara's source report for metropolitan Albuquerque, Albuquerque Observatory, January 1973, p. 107.

In line with this model, Observatories provided information on one or more indicators describing key elements in the processing system. Selected examples of the types of data at various points in the processing system are presented below.

Dropout Rates

Jencks has observed that "Americans are impressed by educational credentials and . . . credentials confer status in the same way that indulgences confer grace."[14] Jencks has found that the correlation between a man's educational attainment and his occupational status is around 0.65. McNamara concludes that "as long as the society at large places high emphasis on educational attainment, e.g., in terms of admissibility to higher status employment, indicators such as dropout rates . . . are valuable as partial predictors of one's life chances for upward socioeconomic mobility."[15]

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[13] Patrick H. McNamara, source report for metropolitan Albuquerque, Albuquerque Observatory, January 1973, p. 94.

[14] Christopher Jencks, Inequality--A Reassessment of the Effect of Family and Schooling in America, New York: Basic Books Inc., 1972, p. 180.

[15] Op. cit., p. 96.

The Albuquerque report contains more information on the dropout problem than reports from the other Observatory communities. McNamara has suggested employment of an index of the ability of a school system to "hold" its students through a given time period. Table 6.6 is taken from the Albuquerque report. It gives information on the estimated holding power of the Albuquerque public school system of students enrolled in grades nine through twelve from 1963 through 1972.

TABLE 6.6

ESTIMATED HOLDING POWER OF ALBUQUERQUE PUBLIC SCHOOLS
Grades 9 through 12, 1963-1972, by Percent

School Year	Albuquerque	New Mexico	U.S.A.
1963-1964	70.8%	66%	70.6%
1964-1965	73.9	70	73.7
1965-1966	75.0	71	77.3
1966-1967	78.6	73	77.8
1967-1968	80.5	74	78.5
1968-1969	83.3	75	78.8
1969-1970	80.1	75	79.1
1970-1971	80.0	75	----
1971-1972	81.8	---	----

Source: "Membership Trends in the Albuquerque Public Schools," APS, 1972.

Holding power is defined as the ratio of high school graduates to ninth graders, three years earlier. The holding power for the Albuquerque schools was compared with similar ratios for the state of New Mexico and for the United States. The data shows that Albuquerque by 1966-1967 established a holding trend considerably above the New Mexico statewide levels and somewhat in excess of United States levels. McNamara suggested that it would be more instructive if Albuquerque could be compared with other metropolitan areas across the nation and particularly with those in the Southwest.[16]

Variables related to holding power. McNamara identified at least three variables related to the holding power of educational institutions. Dropout rates are higher among minority and low-income students, among "repeaters" and among those with high absence rates. A recent study of Southwestern school students undertaken by the U. S. Commission on Civil Rights reported that:

> The proportion of minority students who remain in school through the twelfth grade is significantly lower than that of Anglo students, with Mexican Americans demonstrating the most severe rate of attrition. The Commission estimates that out of every one hundred Mexican American youngsters who enter first grade in the survey area, only sixty graduate from high school; only sixty-seven of every one hundred Black first graders graduate from high school. In contrast, eighty-six of every one hundred Anglos remain in school and receive high school diplomas.[17]

The findings reported by McNamara for the Junior and Senior high schools in Albuquerque were similar to those of the Commission. Those schools with the highest ethnic enrollments were also those with students from families of low economic status leading McNamara to the conclusion that economic status is probably a more important factor in predicting dropping out than cultural disadvantage. There was also some indication from the Albuquerque data that those who are required to repeat a grade or who have an unusually high level of absences are more likely to drop out of school than those who are not repeaters or absentees. McNamara says that "a continuing absence trend . . . should alert school officials to the presence of a potential 'danger pattern' . . ."[18]

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[16] Ibid., McNamara, p. 99.

[17] The Unfinished Education: Outcomes for Minorities in the Five Southwestern States. Mexican American Educational Series, Report II (Washington, D.C.: United States Commission on Civil Rights, 1971), p. 42.

The Nashville Observatory also did some work on the dropout phenomenon. What Albuquerque referred to as the "holding power" of the school system, the Nashville Observatory called the "efficiency of the school system." "Efficiency" can be measured "in any of several ways, all revolving around the number of graduates produced, such as the number of graduates in relation to the number of pupils processed through the system."[19] Both the Albuquerque and Nashville reports noted that the "crisis year" in the dropout problem occurs in the tenth grade. "After the ninth grade, more and more pupils leave at every junction since those who are forced to repeat grades reach age seventeen and are able to legally drop out."[20] The Nashville Observatory traced the history of several cohorts of students from academic year 1939-1940 through academic year 1958-1959. They found that the "proportion from each cohort that graduated, i.e., the efficiency of the system, has increased dramatically from 24.3% to 61.3% . . . (While) these percentages include some members of other cohorts and exclude members of that particular cohort who graduate but in different years . . .," this fact does not alter the basic trend of an increase in percentage of students graduating from the system.

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[18] Op. cit., McNamara, p. 101.

[19] Nashville Quality of Life under published draft, p. 86.

[20] Ibid.

The Kansas City report defines a dropout as one who leaves school prior to high school graduation and who does not return to school. If the school from which the student has dropped out does not receive a request for a transcript or other record by some other school, this fact is used as the criterion defining "dropped out."[21] The findings from Kansas City (Kansas and Missouri) was that the "percentages dropping out from junior high school in both cities are decreasing . . . but that within - school - year dropouts are increasing slowly in Kansas City, Missouri, high schools and decreasing slowly for Kansas City, Kansas, high schools."[22] The author notes that the Kansas City, Kansas, school district was expanded several years ago to include a large suburban area. The holding power or efficiency of school systems tends to be higher in suburban areas than in central cities. Arnold notes that "the Kansas City, Missouri, school district is 'locked in' to an area with a gradually declining socio-economic level, so some increase in leaving school is not surprising."[23] As was the case in Albuquerque and Nashville, Arnold noted "a long run increase in staying in school for cohorts of those who begin the ninth grade but do not enroll as twelfth graders three years later. Apparently, the slight rise in leaving school during the school year is more than offset by a gradual, irregular decrease in those who fail to re-enroll in the fall."[24]

In summary, the Albuquerque, Nashville, and Kansas City reports used the dropout rate as a measure of the "holding power" or the

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[21] William R. Arnold, A Social Report for Central Portions of the Kansas City Area: Testing and Reporting of Governmental Indices, Mid-America Observatory, May 1973, p. 109.

[22] Ibid., p. 111. [23] Ibid., p. 111. [24] Ibid., p. 111.

"efficiency" of school systems in inducing their students to complete their education through graduation. A number of variables, including economic status, minority status, etc., are associated with the dropout phenomenon. Jencks, without adducing any specific evidence, takes the prosaic view that students will remain in school if they do well and that they will drop out if they do poorly."

> In general, we expect students to remain in school and enter college if they are good at doing the things schools value and reward. We expect them to drop out of school if they are bad at doing these things. Of course, we also expect exceptions. Some students will drop out even though they have done very well in school, both socially and intellectually. Others stay in school and attend college despite poor grades, conflict with the school authorities, or both. In general, however, we view persistence in school and collge as a measure of how agreeable a student finds life in these institutions, and we believe most students find school life agreeable if they are good at the tasks schools set . . .[25]

This simple explanation of the dropout phenomenon explains most of the variables associated with the phenomenon. Low income and minority students may not be as well prepared to meet the requirements of school systems which are primarily organized to meet the needs of persons from middle and higher income backgrounds. Such persons tend to do poorly on tests and other measures of achievement. As a consequence of poor evaluations, such students might also be anticipated to have higher absence rates than other students and would tend to be more highly represented among the "repeater" population. Jencks asserts that socio-cultural origin largely determines how much schooling people get so that

> cultural attitudes, values, and task for schooling play an even larger role than aptitude and money. Even if a middle-class child does not enjoy school, he eventually assumes that he will have to stay in school

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[25] Christopher Jencks, "Inequality: A Reassessment of the Effect of Family and Schooling in America," Basic Books, Inc., 1972, New York, pp. 156-157.

for a long time. Children with working class parents or lower class parents eventually assume that if they dislike school, they can and should drop out.[26]

The influence of what Jencks calls family background includes socio-cultural and other influences "within an individual family which effect his or her subsequent cognitive aptitudes or educational attainment."[27] In this regard, measures of cognitive aptitude and educational attainment were included in only two of the eight city reports.

Test and Skills Achievement Scores

Of the eight cities, only San Diego and Kansas City (Kansas and Missouri) included data on achievement scores for their respective school districts. The two Kansas cities reported on tests given in the third and eighth grades. These grades were selected "because the third grade is about the earliest that class-administered tests are reliable and because the eighth grade is the last grade to be tested in both cities before the students reach the maximum age required for attendance."[28]

The San Diego report included the detailed results of test information for the years 1970 and 1971 for grades eight and twelve, and partial information on grades one, two, three, four, six, ten, and eleven.[29]

The Kansas City report notes that "achievement tests have been roundly condemned for years, chiefly because they reflect home environments and preschool influences as much or more as they reflect scholastic ability or quality of education experience."[30] However, Arnold, the author of the Kansas City report, argues that since such tests "reflect the quality of home influences as well as educational influences" they can be used as joint indicators of both influences. They are valuable since they have implications for the "future quality of life of those taking the test . . ."[31] Dr. Clyde J. Baer, Director of Evaluation and Accountability for the Kansas City, Missouri, schools was quoted in this regard.

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[26] Ibid., p. 141.

[27] Harvard Educational Review, February 1973, Vol. 43, #1, p. 40.

[28] William R. Arnold, A Social Report for Central Portions of the Kansas City Area: Testing and Reporting of Governmental Indices, Mid-America Observatory, May 1973, p. 115.

[29] Robert Ontell, Quality of Life in San Diego, Urban Observatory of San Diego, March 1973, pp. 118-136.

> . . . Tests which measure past performance such as acquired knowledge, etc., become predictors of future scholastic performance and, as such, represent measures of scholastic aptitude. The use of past performance as a predictor of future performance is well established practice. Often the application of tests as a measure of past performance for the purpose of predicting future performance is overlooked. . . (Baer: 1969, 21)

Arnold says that it is precisely such possibilities for "prediction of future life chances for further education and vocational choices that education indicators crucially provide."[32] The Kansas City (Kansas and Missour) third and eighth grade achievement test results were given on a system-wide basis for the academic year 1957-1958 through academic year 1970-1971 depending upon whether or not data was available. The major finding was that educational achievement in both Kansas cities was "somewhat below the national norm in both the third and eighth grade throughout the period for which we have data."[33] Arnold was not surprised by this finding since both school districts have a disproportionate percentage of "inner-city populations."

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[30] Op. cit., William R. Arnold, p. 117.

[31] Op. cit., p. 118.

[32] Op. cit., p. 118.

[33] Op. cit., p. 118.

The San Diego report on test achievement levels for the eighth and twelfth grades contained detailed information for the two years 1970-1971. Separate test scores were provided for reading, spelling, total language, arithmetic comprehension, arithmetic concepts, and arithmetic application for each junior high school in the district so that inter-school as well as temporal comparisons were possible. Similar information was available for the twelve high schools in the San Diego Unified School District for the years 1970-1971. Comparisons of the scores on all six portions of the eighth grade test between 1970 and 1971 showed that while San Diego's eighth grade children exceeded the performance of the nation's eighth graders, that there was a decline in the performance levels over the comparison period. The school district had called attention to the fact that San Diego is a high mobility area, so that "achievement of transient pupils makes a judgment of the effectiveness of the educational program more difficult." About 40% of any sixth grade class leaves the district and their places are taken by new pupils by grade twelve. The San Diego report recommended that the Board of Education consider the possibility of "partialling out" that portion of the test population which has had continuous residence within the boundaries served by the San Diego Unified School District so that performance of "continuous resident students" could be compared with new or recent arrivals. In a subsequent report on the performance of students in the sixth grade during academic year 1972-1973, the school district followed through on this suggestion. Sixth graders who had continuous residence in San Diego were compared with those who had only three or fewer years of residence. The finding was that students who had continuous residence performed significantly better on the tests than those who were recent migrants to the community.[34]

Since school districts tend to use a variety of testing tools, it is not always possible to make inter-city comparisons. The San Diego School District used essentially the same testing material year after year thus making it possible to provide for intra-school comparisons over a number of years. Wide discrepancies in performances were recorded in the San Diego scores. In general, those schools with low achievement records had students from low income and minority families and those schools with high performance had students from more affluent backgrounds.[35] These findings are, of course, not exceptional to San Diego. One advantage of providing such data on a regular basis is that it pin points the subject areas as well as the schools which require improved performance. In this respect, the Jencks findings are discouraging since his data tends to support the view that schools can do very little to improve the test performance of children or to enhance their cognitive skills.

Summary

The Observatory reports on education were largely restricted to the use of 1960 and 1970 census information. Data were presented on median education and percentage of high school and college graduates for that portion of the population twenty-five years of age and older. Data were also disaggregated by race. Some suggestions were made for developing a process model for measuring achievement of students at various points in time during their progression through the system. The Nashville Observatory was the only one which attempted to implement this suggestion, however, the information gathered was far from complete.

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[34] San Diego City Schools Evaluation Services Department Report, San Diego State and District Testing Results by District and by School, Report #120, October 6, 1972, p. 25.

[35] Op. cit., Robert Ontell, p. 135.

Some of the observatories provided dropout data as a measure of the holding power or efficiency of school systems and several of the observatories provided data on test performance as a measure of achievement. Aside from reference to census data, most of the observatories confined their reporting to the publically supported educational institutions, namely those which provided education from kindergarten through the twelfth grade. San Diego report was exceptional in this respect in that information was provided on minority representation in higher education over a period of several years.

It is ovcious that greater clarity is required in making decisions about what types of indicators should be employed to measure the quality of education. Etzioni's suggestions are useful since high value is placed on credentials in our society, without necessarily taking into account the quality of education allegedly reflected by the credential. The problem of developing meaningful quality measures will not be resolved until greater clarity is achieved regarding the goals of education in a rapidly changing society. Once such goals are specified, it may be possible to measure the degree to which they are being realized.

Chapter 7

PUBLIC SAFETY INDICATORS

That which is called "crime" in our society falls into four categories, as follows: (1) predatory crimes, (2) illegal service crimes, (3) public disorder crimes, and (4) crimes of negligence.

Predatory crimes are defined by Glaser as "those acts which have a definite and intended victim. The victim either has property taken away--by stealth, force, threat, or deceit--or is physically or sexually assaulted . . ."[1] Glaser distinguishes between two kinds of predatory crimes, those which involve offenses against persons and those which constitute crimes against property. Crimes against property occur more frequently than crimes against persons but the latter give rise to the "greatest public concern."[2]

Illegal service crimes arise from the provision of illicit goods offered by suppliers of narcotics, prostitution, gambling, usurious loans and other such amenities to customers. Such services are not usually available through ordinary, legal business channels.

Public disorder crimes like illegal service crimes lack a specific victim. These offenses include such items of behavior as drunkenness, disorderly conduct, indecent exposure and the like. More arrests are made for such offenses than for predatory or illegal services crimes but these are considered less damaging to society.

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[1] Daniel Glaser, "National Goals and Indicators for the Reduction of Crime and Delinquency," in Bertram M. Gross, Ed., Social Intelligence for America's Future, Boston: Allyn and Bacon, 1969, p. 407.

[2] Ibid., p. 407.

Crimes of negligence involve unintended victims. Traffic infractions are the most common crimes in this category.[3]

Glaser suggests that social indicators be developed for all four categories of crime. This report will be confined to a discussion of predatory crimes. It will include only those predatory crimes reported to the Federal Bureau of Investigation. There are seven such crimes; four are crimes against the person and three are crimes against property. The four crimes against persons are murder and non-negligent manslaughter, assault, rape, and robbery. The three property crimes are burglary, car theft, and larceny. These crimes do not exhaust the list of all possible predatory crimes. They have been selected because information on them is more complete than on other types of predatory offenses.

A major recommendation of the 1967 Presidential Commission on Law Enforcement and the Administration of Justice was that the FBI Index of reported crimes "should be broken down into wholly separate parts, one for crimes of violence and the other for crimes against property." The Commission also recommended that "wherever possible, crime should be reported relative to the population as well as by the number of offenses, so as to provide a more accurate picture of risks of victimization in any particular locality."[4] This recommended practice will be followed in this report. Crimes against the person which include homicide, forcible rape, robbery, and assault will be reported first. Since such crimes tend to be reported more frequently than property crimes, there is the temptation to sum them up and develop a single index of risk to the person. This is the practice which the FBI follows for all seven index crimes. It is a faulty procedure for several reasons. The assumption in developing a single index is that all crimes are reported with equal consistency. The evidence is that most crimes, with the possible exceptions of homicide, armed robbery, and auto theft are vastly underreported for reasons which will be specified as data are presented for each type of crime. Secondly, a single index tends to lump together crimes like homicide and larceny, giving both equal weight in the combined figures. It simply does not make sense to give a murder the same weight as a property theft of $50.00. Thus, in this report the rates per 100,000 population for each type of crime will be presented separately. Information will be given on the number of incidents, by type of crime per 100,000 population for each year commencing with 1960.

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[3] Ibid., p. 407.

[4] The Challenge of Crime in a Free Society, A Report by the President's Commission on Law Enforcement and Administration of Justice, Washington, D.C.: U.S. Government Printing Office, February 1967, p. 31.

HOMICIDE

Definition of Homicide

Criminal homicide includes murder and non-negligent manslaughter. These acts are defined as willful, felonious homicides and are distinguished from deaths caused by negligence. Excluded from this definition are attempts to kill, assaults to kill, suicides, accidental deaths , and justifiable homicides. A justifiable homicide is defined as (1) the killing of a person by a peace officer in the line of duty, or (2) the killing of a person caught in the act of commiting a felony by a private citizen. Non-negligent manslaughter is distinguished from manslaughter by negligence. Manslaughter by negligence is any death the police investigation establishes as primarily attributable to the gross negligence of some individual other than the victim.[5]

Homicide in the United States

In 1971 there were 17,600 incidents of homicide in the United States. This comes to 8.5 victims per 100,000 inhabitants. This rate is the highest in history of the United States and represents a 9% rise over the year 1970. The homicide rate in this country has increased steadily since 1965 when the rate was 5.1 per 100,000. Thus, since 1965, there has been a 67% increase in the rate of homicide.

Homicide rates vary geographically; they vary in proportion to the density of the population; they vary by sex and by ethnicity. While the total United States rate in 1971 was 8.5 per 100,000, the rate for cities of 250,000 and over was 19.5 per 100,000. In suburban areas the rate was 4.2 and in rural areas, it was 6.9. The number of murder victims in the Southern states was the highest in proportion to the population by region --12.2 per 100,000 as compared to a rate of 6.8 in the Northeastern states.

Males outnumbered females as victims of murder by almost four to one. Forty-four of every one hundred victims were White and fifty-five of every one hundred were between twenty and twenty-five years of age.

Sicty-five percent of all homicide victims were killed by firearms (51% by handguns, 8% by shotguns and 6% from rifle wounds). Seven out every ten victims in the South were killed by firearms.

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[5] Federal Bureau of Investigation, U. S. Department of Justice, Uniform Crime Report, U. S. Government Printing Office, Washington, D.C., 1971, p. 61.

As in previous years, most murders were committed by relatives of the victim or by persons acquainted with the victim. About 25% of all homicides involved family members. In about one-half of those incidents, spouse killed spouse; the remainder involved other types of family killings such as parents killing children or others within the family relationship system. Only 28% of all homicides last year resulted from slayings during the course of a felony.

The remainder of the homicides--47%--resulted from romantic triangles or lovers quarrels, arguments outside the family, or by persons who were acquainted with the victims of the fatal incidents. Females were victims in 58% of the murders resulting from lovers' quarrels; however, when a third partner entered the scene, a male was the victim in 92% of the cases. In 1971, 62% of the victims were White, 37% were Black and 1% were from other racial groups.[6]

Homicides in the Eight Cities

Table 7.1 gives information on the rate and number of homicides committed within the eight cities for the years 1960 and 1970.

The homicide rate increased in six of the cities between 1960 and 1970. Nashville was the only city which showed a decline in the homicide rate during the decade. There was no information available for Kansas City, Missouri, for 1960 so that a comparison was not possible. The increase in the homicide rates follows the national trend as well as the steep rise in homicide rates in cities of over 250,000 population. Of the cities on which information was available, Milwaukee and San Diego had the lowest homicide rates in both 1960 and 1970. Milwaukee was lowest in

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[6] Ibid., pp. 6-9.

1960 and San Diego was lowest in 1970. The cities with the highest rates in 1960 were Nashville with 21.1 per 100,000 and Atlanta with 13.7 per 100,000. In 1970 the cities with the highest rates were Atlanta with 48.7 per 100,000 and Kansas City, Missouri, with 23.7 per 100,000. The cities with the lowest levels of homicide during the decade were San Diego with rates of 4.0 in 1960 and 4.6 in 1970 and Albuquerque with rates of 7.0 in 1960 and 7.8 in 1970. The steepest rise in the decade was in Atlanta. The rate more than tripled rising from 13.7 to 48.7 per 100,000 over the ten-year period. The rise in the Denver rate was also quite steep moving from 5.7 in 1960 to 14.4 in 1970.

The decline from a rate of 21.1 to 14.3 in Nashville runs counter to both the national trends and to the trends for cities of over 250,000 population. The reason for the decline is not clear. An analysis of the San Diego data indicates a rather unusual phenomenon. In addition to having a relatively low rate of homicide, the rate did not fluctuate by more than two percentage points in any year from 1960 through 1972. Discussion with police authorities yielded no satisfactory explanation for this unusual fact but there were some rather interesting speculations to account for the findings. One explanation is related to the "density factor." San Diego is a city which is spread over a large geographical area with a low percentage of multiple dwelling units and with considerable open space. There is outside evidence which indicates that low density living circumstances tend to be associated with low levels of interpersonal conflict and therefore lower rates of homicide and assaults. Another explanation might be termed the "cabin fever syndrome." The climate of San Diego is mild and persons are not confined indoors to the same degree that they are in colder climates. The theory is that close confinement tends to heighten irritability and frustration thus promoting higher levels of interpersonal conflict. A further explanation given by the police is that the San Diego department has a faster "response rate" than other cities in answering calls for help involving interpersonal altercations. The reasoning is that interpersonal conflicts which might have ended in lethal solutions, are terminated at the level of assaults. San Diego also has a very high percentage of high school and college graduates. An inverse relationship has been established between high levels of education and low levels of homicide. The theory is that persons with higher education are more apt to resort to verbal violence rather than to physical violence when interpersonal confrontations take place. While all of these reasons are plausible, there is no hard evidence for the validity of any of them.

FORCIBLE RAPE

Definition of Forcible Rape

A forcible rape is defined by the FBI as "carnal knowledge of a female through the use of force."[7] Consumated forcible rapes as well as attempted forcible rapes are included in the FBI statistics for this crime. No distinction is made between a consumated rape and a forcible attempt in presenting the final index statistic.

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[7] Ibid., p. 12.

TABLE 7.1

CRIMES AGAINST THE PERSON--HOMICIDE
1960-1970

	1960	1970
UNITED STATES		
Population	179,323,175	203,184,772
Rate/100,000	5.0	7.8
All U.S. Cities over 250,000 Population		
Population	35,337,512	42,181,000
Rate/100,000	6.8	17.5
Albuquerque		
Population	201,189	243,751
Rate/100,000	7.0	7.8
Atlanta		
Population	487,455	496,973
Rate/100,000	13.7	48.7
Denver		
Population	493,887	514,678
Rate/100,000	5.7	14.4
Kansas City, Missouri		
Population	475,539	507,087
Rate/100,000	NA	23.7
Kansas City, Kansas		
Population	121,901	168,213
Rate/100,000	4.7	10.7
Milwaukee		
Population	741,324	717,372
Rate/100,000	2.0	7.0
Nashville		
Population	170,874	448,003
Rate/100,000	21.1	14.3
San Diego		
Population	573,224	696,769
Rate/100,000	4.0	4.6

The Incidence and Prevalence of the Crime of Forcible Rape

One of the problems with rape statistics is that official information vastly underrepresents the prevalence of this crime. A survey done by the National Opinion Research Center indicates that the officially recorded incidence of forcible rape is about half the rate of self-reported occurrences.[8]

Glaser explains this discrepancy by hypothesizing that the victims of rape feel such intense shame, embarrassment or fear that they develop "an interest in not reporting the rape."[9]

The FBI agrees that rape is probably one of the most under-reported crimes and is "due primarily to fear and/or embarrassment on the part of the victims."[10] Keeping this caution in mind, the following information is given by the FBI on this offense for the year 1971.

The Crime of Forcible Rape in the United States

The total number of reported rapes in 1971 was 41,890, constituting 5% of all the crimes of violence in the United States. The highest rates for this crime were in the Western states. There, the rate was 30.0 per 100,000 inhabitants as compared with a rate of 13.4 for the Northeastern states. The volume of forcible rape offenses increased by 11% since 1970 and by 64% since 1966.

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[8] Op. cit., The Challenge of Crime in a Free Society, p. 19.

[9] Daniel Glaser, "National Goals and Indicators for the Reduction of Crime and Delinquency," in Bertram M. Gross, Ed., Social Intelligence for America's Future, Boston: Allyn and Bacon, 1969, pp. 414-415.

[10] Federal Bureau of Investigation, U.S. Department of Justice, Uniform Crime Report, U. S. Government Printing Office, Washington, D. C., 1971, p. 18.

This crime occurs most often in cities of 250,000 or more inhabitants.

Rape rates, when given per 100,000 population, distorts the actual risk to the females involved. A realistic accounting would require stating the rates as so many events per 100,000 females. In 1971, forty out of every 100,000 females were reported rape victims. In the core areas of large cities, the victim risk rate was eighty-five per 100,000.

In the FBI statistical count for 1971, 72% of all offenses were rapes by force. The remaining 28% were attempts or assaults to commit forcible rape.

The largest number of perpetrators were males seventeen to twenty years of age; 64% of arrests for forcible rape in 1971 were of persons under the age of twenty-five. Approximately 50% of all those arrested for this crime were Blacks, 48% were Whites and other races comprised the remainder. The most vulnerable victim group was between twenty and twenty-nine years of age. According to the National Opinion Research Center survey done in 1967, the actual rate for this age cohort was 238 per 100,000.[11]

Reported rates did not vary much between the years 1960 and 1963. Since 1963, rate per 100,000 doubled, increasing from 9.3 in 1963 to 20.3 in 1971.

The Crime of Rape in the Eight Cities

There was a steep rise in the crime of forcible rape, during the decade of the sixties in all of the cities studied. The rise was even greater than that reported for the United States or for the average of all United States cities with more than 250,000 population.

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[11] Op. cit., The Challenge of Crime in a Free Society, p. 19.

The rates in 1960 varied from a low of 4.1 in Kansas City, Kansas, to a high of 16.4 for Denver. With the exception of Denver, all of the cities had lower rates for this crime than the reported average of 15.2 per 100,000 for cities of over 250,000 population. Five of the seven cities on which information was available, namely Atlanta, Kansas City (Missouri), Milwaukee, Nashville, and San Diego, had rates which were lower than the national rate of 9.5. The picture changed rather remarkably by 1970. In that year the rates ranged from a low of 13.0 in Milwaukee to a high of 92.1 for Denver. Only one of the eight cities, Milwaukee, had a rate which was lower than that for the United States as a whole--13.0. Milwaukee, Nashville, and San Diego were the only cities which had rates which were lower than the average for cities of over 250,000 population.

Cities which showed the steepest increase over the ten-year period were Kansas City, Kansas, with an increase in the rate from 4.1 to 61.8--a 1407% rise. The rate for Denver rose 462% from 16.4 in 1960 to 92.1 in 1970. Albuquerque, Milwaukee and San Diego had the lowest relative rise among the cities studied, but even in those communities, there was an average 200% increase in the incidence of rapes reported to the police.

Part, but not all, of the increase may be attributed to the fact that the youth population between the ages of fourteen and twenty-four experienced a 50% increase in numbers during the decade of the sixties. Since most rapes are committed by young males in this age group, this fact would explain some, but certainly not all of the increase which occurred during the decade. There is also a possibility that cultural changes which occurred during the decade may also have influenced the rise in propensity to report rapes. One theory holds that females are morelikely to report such events than they formerly were. Self-report (victimization) studies are currently under way and should shed more light on the issue of whether the increase in reported incidence actually reflects a true rise in the occurrence of this crime.

One other serious source of error comes from police reporting practices. An analysis of the data for the Kansas City, Missouri, for the years 1960 and 1961 shows a sharp rise in the rate over a period of one year from 8.4 in 1960 to 35.5 in 1961. Rates prior to 1960 were also small. The social report for the Kansas City area explains this and other discrepancies as follows:

> Someone 'discovered' that by no means all of the offenses handled by the police department were being recorded. Our informant was a lieutenant at the time and was in charge of the highest offense rate area. He said that they were handling serious offenses so fast that they simply did not take the time to make proper records. The publicity given to the inaccuracies in the records brought about a number of changes in the record-keeping process.[12]

As a consequence of the bad publicity, additional personnel were hired to prepare accurate reports of known criminal offenses. As a consequence, "Part I" offenses in Kansas City, Missouri, jumped from 7,232 in 1960 to 17,479 in 1961.[13]

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[12] William R. Arnold, A Social Report for Central Portions of the Kansas City Area: Testing and Reporting of Governmental Indices, Mid-America Urban Observatory, Kansas City, Missouri, May 31, 1973, p. 180.

[13] Ibid., p. 180.

TABLE 7.2

CRIMES AGAINST THE PERSON--FORCIBLE RAPE 1960-1970

	1960	1970
UNITED STATES		
Population	179,323,175	203,184,772
Rate/100,000	9.5	18.5
All U.S. Cities over 250,000 Population		
Population	35,337,512	42,181,000
Rate/100,000	15.2	39.7
Albuquerque		
Population	201,189	243,751
Rate/100,000	12.9	39.0
Atlanta		
Population	487,455	497,973
Rate/100,000	9.0	40.6
Denver		
Population	493,887	514,678
Rate/100,000	16.4	92.1
Kansas City, Missouri		
Population	475,539	507,087
Rate/100,000	8.4	79.1
Kansas City, Kansas		
Population	121,901	168,213
Rate/100,000	4.1	61.8
Milwaukee		
Population	741,324	717,372
Rate/100,000	4.3	13.0
Nashville		
Population	170,874	448,003
Rate/100,000	5.3	23.9
San Diego		
Population	573,224	696,769
Rate/100,000	6.3	19.4

ROBBERY

Definition of Robbery

Robbery is defined by the FBI as the act of stealing or taking anything of value from the care, custody or control of a person by force or violence or by putting the victim in fear. Strong-arm robbery, stick-ups, armed robberies and assaults to rob as well as attempts to rob are all included in the FBI crime statistics for robbery.[14]

The Crime of Robbery in the United States

In 1971, there were an estimated 385,910 robberies committed in the United States, an 11% increase in volume over the previous year. Since 1960, robberies known to the police increased by 212.4%. In 1971 the robbery rate was 187 victims for every 100,000 inhabitants.

Robbery is a crime which varies by geographical region and by population density. Ro-bery rates were highest in the Northeastern states and lowest in the Southern states. The robbery rate for the Northeastern part of the country was 285.0 per 100,000 inhabitants in 1971 as contrasted with a rate of 130.6 in the Southern states.

Robbery is also a big city crime. The robbery rate in 1971 for cities of over 250,000 population was 633.4 per 100,000 population. Thus, thebig city rate was more than three times the national average. It was ten times the suburban rate and forty-three times the rural rate.

Two-thirds of robberies involved the use of weapons. One-third of the incidents involved the use of physical force, that is muggings, yokings, violent confrontations, or the use of personal weapons. The average loss to victims of robberies in 1970 was $226. The total loss was $87,000,000.00.

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[14] Op. cit., Uniform Crime Report, 1971, p. 61.

Over three-fourths of all persons arrested for robbery were under twenty-five years of age and 65% were under twenty-one years of age.

The Crime of Robbery in the Eight Cities

Robbery rates, like the rape rates increased dramatically in all eight cities during the sixties. In 1960 only Milwaukee and San Diego had robbery rates which were lower than the average for the United States. In that year Denver was the only city with a robbery rate which was higher than that for average cities of over 250,000 population. Similarly, in 1970 Milwaukee and San Diego were the only two of the eight cities which had rates which were lower than the United States average. All eight cities had robbery rates which were lower than the average for cities of over 250,000 population in 1970. Kansas City, Missouri, however, had a rate which closely approximated that for large size cities.

In 1960 robbery rates ranged from a low of 21.2 per 100,000 population in Milwaukee to a high of 209.4 for Denver. In 1970 the rates were higher for all eight cities; the range was from a low of 90.5 for Milwaukee to a high of 588.1 for Kansas City, Missouri. In the decade between 1960 and 1970, the United States robbery rate increased by 186%. The rate for cities of over 250,000 population increased by 400%. Among the eight cities studied the percentage increase during the decade ranged from 107% for San Diego to 791% for Kansas City, Missouri. Both Kansas City, Missouri, and Atlanta, with an increase of 577%, exceeded the increase for the average city of 250,000 population or over. The percentage increase for San Diego (107%) and for Nashville (119%) were lowest among the eight cities. Indeed the rates were lower in these two communities than the average for the United States. Milwaukee, which had the lowest rate in 1960 and in 1970, nevertheless showed a substantial (327%) increase in robbery rates over the course of the decade.

In 1970 there were twenty-eight cities in the United States with populations which ranged between 250,000 and 500,000. Robbery rates in those cities increased by 258% during the decade.

It was noted earlier that 75% of all persons arrested for robbery were under twenty-five years of age in 1970 and 65% were under twenty-one years of age. Part of the explanation for the steep rise in robberies during the decade of the sixties is attributable to the sharp increase in the numbers of that age group most likely to commit robberies. As with rape, this demographic factor provides only a partial explanation for the increase. In discussing the sharp rise in rape rates for Kansas City, Missouri, it was noted that sloppy police reporting practices in that city may have contributed to the confusion over how much of the increase was genuine and how much resulted from poor bookkeeping. Unpublished data from the Nashville report on the quality of life in that city indicates that bad bookkeeping may have accounted for much of the rise in robbery rates in that community. The robbery rate for Nashville-Davidson County in 1965 was 66.2; in 1966, it was 71.5 and in 1967, the robbery rate took a quantum leap and was reported as 146.2. While the report attributes this sudden jump to a "decrease in the police force of 575 to 490 active officers" the authors of the Nashville report were skeptical. They speculated that the manpower decrease is a fact which "may or may not have directly affected the incidence of this type of crime." A more likely explanation is that reporting practices may have been radically changed between 1966 and 1967. Tabular presentation of Nashville data on other crimes including burglary, larceny, and auto thefts also showed the same inexplicable sudden departure from previous trends.

The Council on Municipal Performance, a non-profit, urban research organization, recently reported a rather interesting finding on the relationship between reported robbery rates and the degree of income inequality in the thirty largest American cities. High positive correlations were found between the degree of income inequality which obtained in those cities and the robbery rates. The higher the income inequality the higher the robbery rate, as well as the total rate for non-violent property crimes. A high percentage of families earning over $15,000 and a high percentage of families earning over $50,000 was also found to be highly correlated with high robbery and non-violent property crimes rates. The authors speculate that these findings could mean one of a number of things; "for example, that the availability of wealthy victims is an important determinant of reported crime rates, that wealthier cities hire more police who, in turn, record more crimes, or that the display of wealth propels the poor to crime. Within a metropolitan area, higher income areas have high reported crime rates, which may mean either that under-reporting and under-recording of crimes is higher in poorer areas or that criminals are attracted to high income areas for their crimes."[15] Surveys which are currently under way in thirteen cities (Atlanta, Baltimore, Chicago, Cleveland, Dallas, Denver, Detroit, Los Angeles, New York, Newark, Philadelphia, Portland, and St. Louis) may shed further light on these reported findings. Whether or not "relative deprivation" (degree of income inequality) is a useful explanatory variable for high robbery rates as well as other crime rates is an open question.

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[15] Municipal Performance Report, Council on Municipal Performance, New York, 1:1, May-June 1973, p. 18.

TABLE 7.3

CRIMES AGAINST THE PERSON--ROBBERY

	1960	1970	Percent Increase 1960-1970
UNITED STATES			
Population	179,323,175	203,184,772	
Rate/100,000	59.9	171.4	186
All U.S. Cities over 250,000 Population			
Population	35,337,512	42,181,000	
Rate/100,000	117.6	589.4	401
Albuquerque			
Population	201,189	243,751	
Rate/100,000	76.0	177.6	34
Atlanta			
Population	487,455	496,973	
Rate/100,000	63.2	427.8	577
Denver			
Population	493,887	514,678	
Rate/100,000	209.4	384.7	132
Kansas City, Missouri			
Population	475,539	507,087	
Rate/100,000	66.0	588.1	791
Kansas City, Kansas			
Population	121,901	168,213	
Rate/100,000	89.4	342.4	263
Milwaukee			
Population	741,324	717,372	
Rate/100,000	21.2	90.5	327
Nashville			
Population	179,874	448,003	
Rate/100,000	103.6	226.6	119
San Diego			
Population	573,224	696,769	
Rate/100,000	58.6	120.4	107

AGGRAVATED ASSAULT

Definition of Aggravated Assault

Aggravated assault is assault with intent to kill or for the purpose of inflicting severe bodily injury by shooting, cutting, stabbing, maiming, poisoning, scalding or by the use of acids, explosive, or other means. Excluded from the aggravated assault statistics are incidents of simple assault, battery, fighting, etc.[16]

The Crime of Aggravated Assault occur within the family or between friends, neighbors, and acquaintances. The victim-offender relationships are similar to relationships which end in homicide. Most of the parties to such crimes are known to each other. Because victims and assailants are closely acquainted, victims are frequently unwilling to testify or prosecute. As a consequence, 40% of the prosecuted cases end in either acquittals or dismissals. Also, as a consequence of these close relationships, a substantial number of aggravated assaults are not reported to the police and do not, therefore, enter into the crime statistics. A National Opinion Research Center survey of 10,000 households taken during fiscal year 1965-66 indicates that for every reported case of aggravated assault, there is at least one unreported case. In 1965, the Unified Crime Report Index rate for aggravated assault was 106.6 per 100,000 individuals. The National Opinion Research Center survey showed a self-reported rate of 218.3 per 100,000.[17]

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[16] Op. cit., Uniform Crime Report, 1971, p. 61.

[17] The Challenge of Crime in a Free Society, A Report by the President's Commission on Law Enforcement and Administration of Justice, Washington, D. C.: U.S. Government Printing Office, February 1967, p. 21.

Since willingness to report may vary by class, culture, sex and geographical region, comparisons of aggravated assault rates with other geographical entities may not be warranted.

In 1971, 25% of assaults were committed with the use of firearms. Knives and other cutting instruments were used in 27% of the assaults. The remaining 50% of assaults were committed with either blunt objects or other dangerous weapons or with personal weapons, such as arms, hands, and feet.

The aggravated assault rate for the United States during 1971 was 177 victims for every 100,000 inhabitants. The rate for cities of 250,000 population or more was 351 per 100,000. The suburban rate was 117 and therural rate was one hundred. Like the crimes of homicide and robbery, rates differ regionally. The Southern states were highest with a rate of 223 per 100,000; the Northcentral states were lowest with a rate of 132. Aggravated assaults increased by 92% between 1960 and 1971. The increase between 1970 and 1971 was 8.5%.

Assault Rates in the Eight Cities

The rate of aggravated assaults known to the police increased steeply in the eight cities during the period 1960-1970; the increase for the United States was 92%. For cities of over 250,000 population, the rate increased by 120% during the decade.

Of the eight cities studied, Nashville and Kansas City, Missouri, reported increases of 754% and 665% respectively. It was noted earlier that recording procedures in both these communities were faulty during the early part of the decade so that the sudden extraordinary rise in this crime should be regarded with skepticism. The city with the smallest relative increase in reported aggravated assaults was Milwaukee with a 55%

rise. This increase was lower than that for the country as a whole and for cities of over 250,000 population. The remaining cities all showed increases in reports of aggravated assaults ranging from a 171% in San Diego to a 329% in Denver.

In 1960 only Atlanta and Albuquerque had an assault rate which was higher than that for the United States.

In 1970 only Milwaukee and San Diego had rates which were lower than the average for the United States. The remaining cities had rates which were substantially higher. However, when the eight cities were compared with the average for cities of over 250,000 population, Albuquerque, Kansas City (Missouri), and Nashville had assault rates which were higher. Atlanta, Denver, Kansas City (Kansas), Milwaukee, and San Diego had reported assault rates which were lower than those for cities of 250,000 population.

In 1970 Milwaukee had the lowest rate among the eight cities with 100.4 events per 100,000 population. Nashville had the highest rate with 404.9 events per 100,000 population. The only other city with a relatively low rate of reported assaults was San Diego with 140.8 per 100,000.

PROPERTY CRIMES--BURGLARY

Definition of Burglary

Burglary is a crime against property and include such acts as housebreaking, safecracking or any breaking or unlawful entry into a structure with the intent to commit a felony or a theft. Burglary attempts are also included in the FBI statistics for this crime. Burglary differs from robbery in that it is a crime of stealth. Crime tabulations in this category are broken into three classifications: forcible entry, unlawful

TABLE 7.4

CRIMES AGAINST THE PERSON--AGGRAVATED ASSAULT 1960-1970

	1960	1970	Percent Increase 1960-1970
UNITED STATES			
Population	179,323,175	203,184,772	
Rate/100,000	85.1	163.0	92
All U.S. Cities over 250,000 population			
Population	35,337,512	42,181,000	
Rate/100,000	154.1	333.9	120
Albuquerque			
Population	201,189	243,751	
Rate/100,000	130.7	366.4	181
Atlanta			
Population	487,455	496,973	
Rate/100,000	95.2	262.4	176
Denver			
Population	493,887	514,678	
Rate/100,000	76.3	327.4	329
Kansas City, Missouri			
Population	475,539	507,087	
Rate/100,000	50.7	387.8	665
Kansas City, Kansas			
Population	121,901	168,213	
Rate/100,000	81.2	288.3	249
Milwaukee			
Population	741,324	717,372	
Rate/100,000	64.7	100.4	55
Nashville			
Population	170,874	448,003	
Rate/100,000	47.4	404.9	754
San Diego			
Population	573,234	696,769	
Rate/100,000	52.0	140.8	171

entry where no force is used, and attempted forcible entry. If, in the course of a burglary, a confrontation ensues between the burglar and the victim, the crime is counted as a robbery.[18]

The Crime of Burglary in the United States

A total of 2,368,000 burglaries were reported to the police in 1971. This represents a rise in the burglary rate of 7% over 1970. In 1960, the burglary rate was 502.1 per 100,000. In 1971, the rate was 1148.3 per 100,000.

Burglary rates like other UCR crime rates vary by geographical region as well as by population density. The highest rates for the Western states was 1653.1 per 100,000 population. The lowest rate--977.8 --was for the Northcentral states. Burglary like robbery is a big city crime; 36% of all burglaries during 1971 were committed in cities with populations of over 250,000.

Persons under twenty-five years of age accounted for 83% of all arrests for burglary in 1971. Young persons under eighteen years of age accounted for 51% of all arrests for this crime.

Seventy-seven percent of all burglaries involve forcible entry, and residential burglaries account for 60% of the total offenses. Over one-half of the residential offenses were committed during the daylight hours. Daytime burglaries of residents have increased by 108% since 1966. In 1971 the property loss from burglaries was $739,000,000 with an average dollar loss of $300 per burglary. Sixty-two percent of all losses were from residential burglaries.[19]

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[18] Op. cit., Uniform Crime Report, pp. 18 and 61.

[19] Ibid., pp. 18-21.

Burglary Rates in the Eight Cities

As was the case with other crimes, burglary rates increased sharply during the decade of the 1960s. The increase in the United States was 113% and for cities of over 250,000 population, the increase was 163%.

Of the eight cities studied, only Nashville showed a relatively modest increase of only 6%. The remaining cities showed increases which exceeded the increase for the United States during the decade and only Milwaukee, Nas-ville and San Diego had increases which were smaller than the average for cities of 250,000 population or over.

In 1960 only Kansas City, Missouri, with a rate of 380.2, Milwaukee with a rate of 234.4 and San Diego with a rate of 452.2 had reported burglary rates which were less than the national average of 502.1. Also, in that year, only two of the eight cities, Denver, with a rate of 1040.9 and Nashville with a rate of 1459.0 exceeded the reported burglary rate of 742.1 for cities of over 250,000 population.

In 1970 only Milwaukee with a rate of 599.8 and San Diego with a rate of 990.6 were below the national reported burglary rate of 1071.2. Those two cities and Nashville with a rate of 1457.8 had lower reported burglary rates than the average for cities of over 250,000 population. The remaining cities had rates which exceeded both the national rate and the rate for large size cities. The highest rate in 1970 was 2936.0 for Denver. The lowest rate was 599.8 for Milwaukee.

TABLE 7.5

CRIMES AGAINST PROPERTY--BURGLARY
1960-1970

	1960	1970	Percent Increase 1960-1970
UNITED STATES			
Population	179,323,175	203,184,772	
Rate/100,000	502.1	1071.2	113
All U.S. Cities over 250,000 Population			
Population	35,337,512	42,181,000	
Rate/100,000	742.1	1948.9	163
Albuquerque			
Population	201,189	243,751	
Rate/100,000	583.0	2147.7	268
Atlanta			
Population	487,455	496,973	
Rate/100,000	727.0	2319.8	219
Denver			
Population	493,887	514,678	
Rate/100,000	1040.9	2936.0	182
Kansas City, Missouri			
Population	475,539	507,087	
Rate/100,000	380.2	2221.5	484
Kansas City, Kansas			
Population	121,901	168,213	
Rate/100,000	681.7	2257.3	231
Milwaukee			
Population	741,324	717,372	
Rate/100,000	234.4	599.8	156
Nashville			
Population	170,874	448,003	
Rate/100,000	1459.0	1547.8	6.1
San Diego			
Population	573,224	696,769	
Rate/100,000	452.2	990.6	119

AUTO THEFT

Definition of Auto Theft

Auto theft is defined as the stealing of or driving away and abandoning a motor vehicle. This crime excludes taking an auto for temporary or unauthorized use by those having lawful access to the vehicle. Attempts at auto theft are also included in the FBI crime statistics.[20]

The Crime of Auto Theft in the United States

Auto theft appears to be a highly reported property crime. In a ten-city Citizens Attitude Survey conducted by the Urban Observatory, persons who experienced a car theft were asked whether or not they had reported the incident to the police. About 90% said that they had done so. In a memorandum prepared by the director of the survey, it was reported that the "crime rates derived from (the) survey data (were) very comparable to the rates from the police records." In only one of the ten cities did the two estimates differ by as much as one out of one hundred households.

Because of the high report rate, it was suggested that car thefts should be used as the primary indicator for estimating the rise and fall of all property crimes. This suggestion is worth considering, but recent data indicates that auto thefts may not be representative of all property thefts which occur in this country. For example, in 1971, there were 941,600 motor vehicles stolen but this only represented a 2% increase in the rate of auto thefts over 1970. Most other property crimes increased by larger percentages. However, the general trend in auto theft data seems to follow the general pattern of increase in other property crimes reported in the Crime Index statistics. While auto theft statistics may not be entirely representative of all thefts, they have the virtue of being highly reported and are, therefore, more valid than statistics for other property crimes.

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[20] Ibid., p. 58.

One assumption which has been made about auto thefts is that they tend to increase with the increased volume of automobile registrations. This is not true. From 1966 to 1971, auto thefts increased at more than twice the rate of increase in automobile registrations. Unlike other property crimes which have increased more rapidly in the cities than in the suburbia, auto thefts in 1971 actually decreased by one percentage point in the cities while registering a 6% increase in the suburbs.

As with other crimes, there were regional differences in the incidence of auto thefts. The largest increase in auto thefts was in the Northeastern states, where thefts were up 6% over 1970. The Southern and Northcentral states each reported a decrease of 1%. The highest reates per 100,000 inhabitants was in the Northeastern states, with a rate of 600.2; the lowest rate was in the Southern states with 318.1 per 100,000.

For the country as a whole, the auto theft rate for 1971 was 456.5 per 100,000 inhabitants. Since 1960, the rate of auto thefts in the United States has increased by 151%. In 1969, the rate was 181.7 per 100,000 inhabitants. Persons living in cities with over a million population tend to be the most victimized, with almost 1,200 thefts per 100,000 inhabitants. Nationally, about one out of every one hundred automobiles was stolen. For large cities, this number was even higher. Table 7.6 gives information on ten United States cities during 1970 and compares self-report rates of car thefts per one hundred households with the Uniform Crime Report rates for the year 1969. While the periods do not correspond exactly, they do show that self-report rates are fairly close to the police report rates for this crime.

TABLE 7.6

ESTIMATED RATES OF CAR THEFT FROM
CITIZEN ATTITUDE SURVEY
AND FROM UNIFORM CRIME REPORTS BY CITY

City	Citizen Attitudes Survey[1]	Uniform Crime Reports[2]
Albuquerque	4	2
Atlanta	4	3
Baltimore	5	4
Boston	9	8
Denver	5	4
Kansas City, Kansas	4	3
Kansas City, Missouri	4	4
Milwaukee	3	2
Nashville	2	2
San Diego	2	2

[1] Survey conducted by Urban Observatory in the summer and fall of 1970.

[2] Number of crimes reported in Uniform Crime Reports, 1969, Washington: U.S. Department of Justice, 1969, divided by the number of occupied housing units in each city.

In 1971, 53% of all persons arrested for auto theft were under eighteen years of age. When persons under twenty-one years were included, the proportion of arrests rose to 72%. Of all persons formally processed in 1971, 64% were referred to juvenile court jurisdictions.

No other crime index offense yields such a high percentage of juvenile referrals.

Auto Thefts in the Eight Cities

Rates of auto theft increased 150% in the United States in the decade between 1960 and 1970. The increase for large size cities was even greater. Auto thefts increased 203%, on the average, in cities of 250,000 population or over.

During the decade of the sixties, Denver, Kansas City (Missouri and Kansas), and Milwaukee had increases which exceeded the increase for the United States. However, of the four cities, Milwaukee had a rate which was lower than that for cities of 250,000 population and over. The remaining four cities, namely Albuquerque, Atlanta, Nashville, and San Diego had increases which were substantially smaller than the average for the United States or for large size cities. The lowest rate of increase (15%) was for Nashville. Albuquerque, Atlanta and San Diego had percentage increases in auto thefts of 60%, 80%, and 76%, respectively.

In 1960 when the national rate per 100,000 was 181.7, none of the cities studied had a rate lower than that. When compared with cities of 250,000 population and over (which in 1960 had a rate of 368.8) four of the eight cities had lower rates, ranging from 255.3 for Kansas City, Missouri, to 303.4 for San Diego. The remaining cities had higher rates. The highest reported rate was for Nashville with 651.9 auto thefts per 100,000 population.

In 1970 when the national rate was 353.7, there was again no city with a reported rate of less than that amount. In 1970 the rate for cities of 350,000 population and over was 1116.7. The majority of the eight cities had rates which were considerably less than the average for large size cities. Only two cities among the eight had rates which were larger than those for cities of 250,000 population and over. Denver had a rate of 1543.1 and Kansas City, Kansas, reported a rate of 1132.5.

TABLE 7.7

CRIMES AGAINST PROPERTY--AUTO THEFT
1960-1970

	1960	1970	Percent Increase 1960-1970
UNITED STATES			
Population	179,323,175	203,184,772	
Rate/100,000	181.7	453.7	150
All U.S. Cities over 250,000 population			
Population	35,337,512	42,181,000	
Rate/100,000	368.8	1116.7	203
Albuquerque			
Population	201,189	243,751	
Rate/100,000	469.2	751.6	60
Atlanta			
Population	487,455	496,973	
Rate/100,000	529.5	950.6	80
Denver			
Population	493,887	514,678	
Rate/100,000	468.5	1543.1	229
Kansas City, Missouri			
Population	475,539	507,087	
Rate/100,000	255.3	1098.4	330
Kansas City, Kansas			
Population	121,901	168,213	
Rate/100,000	289.6	1132.5	291
Milwaukee			
Population	741,324	717,372	
Rate/100,000	276.8	699.5	153
Nashville			
Population	170,874	448,003	
Rate/100,000	651.9	753.3	15
San Diego			
Population	573,224	696,769	
Rate/100,000	303.4	535.3	76

LARCENY

Definition of Larceny

Larceny is a property theft in which the stolen item has a value of $50.00 or more. Stealing property valued under $50.00 is counted as petty larceny and is tried as a misdemeanor. Larceny includes such crimes as shoplifting, bicycle theft, etc. It does not include embezzlement, "con" games, forgery and worthless checks. Auto theft is counted as a separate property crime in the list of Crime Index offenses. Larceny is differentiated from robbery and burglary by the fact that the crime does not involve the use of force, breaking and entering, violence or fraud.[21]

The Crime of Larceny in the United States

Of the seven crimes reported by the FBI, the largest volume of offenses were for larceny of $50.00 and over. In 1971, there were 1,875,200 reported larceny offenses. This offense constitutes 31% of the total number of offenses reported in the Crime Index. The rate of larceny in 1971 increased 7% over 1970. Larceny has increased by 221% since 1960.

As with other offenses, there was considerable variation in the rates depending on geographic location and the density of the population center in which the act was committed. The highest larceny rate was in the Western states. There, the rate in 1971 was 1363.1 per 100,000 population. The Western states in general have the highest rates for crimes against property. The lowest rates were reported from the Southern states. There, the rate was 783.5 per 100,000 inhabitants.

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[21] Ibid., pp. 21 and 57.

While the larceny rate for the United States in 1971 was 909.2 per 100,000, the rates for cities of over 250,000 were about one-third --1240.8 per 100,000.

The average value of property stolen in 1971 was $110.00. This was an increase of $36.00 over 1970. One of the problems with using larceny figures is that inflationary factors in the economy are not considered when comparisons with prior years are made. The FBI recognizes the distorting effects which occur and is, therefore, expanding its collection of data on larceny by type of crime. They favor the development of a series on "street larceny," which would include pocket-picking, thefts from autos, automobile accessories, thefts from coin-operated machines, etc. The "street larceny" category will replace larceny of $50.00 and over as the crime index offense in 1973. Street larcenies will identify those thefts which generally occur within the reach of police patrols. The FBI has noted that from year to year, the distribution of larceny by type of theft has remained relatively constant. A major portion of these thefts--37%--represent thefts of auto parts and accessories and other thefts from automobiles.

Forty-eight percent of all arrests for serious crimes in 1971 were for larceny. Fifty percent of arrests were of persons under eighteen years of age. Two-thirds of those arrested were under age twenty-one. Females were represented in 28% of the total of all arrests for larceny--which is a higher involvement rate for females than for any other Index offense. Unlike motor vehicle theft, which has a very high report rate, larcenies are reported in about one-half the cases. This fact, plus the inflationary factor mentioned above, justifies the criticism that larceny data are not among the best indicators available in the current UCR series. The foregoing information suffers from all the limitations mentioned.

Larceny Rates for the Eight Cities

During the decade of the 1960s, larceny rates in the United States increased by 42% and by 170% in cities of 250,000 population and over. Increases in the eight cities studied ranged from 56% for Nashville to 652% for Kansas City. The remaining cities all showed substantial increases. The exceptionally small increase for Nashville as well as the exceptionally high increase for Kansas City, Kansas, probably reflects faulty reporting procedures in those two communities and is consistent with the "off beat" reporting on other crimes for those two cities.

In 1960 when the United States larceny rate was 282.9, Kansas City, Kansas, reported a rate of 76.3. The remaining cities all had rates which were in excess of the national average. Kansas City, Kansas, and Milwaukee had rates which were lower than those for cities of 250,000 population and over.

In 1970, when the national rate was 861.2, Kansas City, Kansas, again had a rate considerably lower--573.7--and was the only city among the eight with a rate lower than the average for the United States. For cities of 250,000 population or over the rate in 1970 was 1290.1. Only Kansas City, Kansas, with a rate of 573.7 and Nashville with a rate of 980.8 were lower than the average for such large size cities. The remaining cities all had substantially higher rates ranging from 1459.0 for Atlanta to 1992.2 for Albuquerque. As noted earlier, the crime of grand larceny requires that the property stolen have a value of $50.00 or more. Since victims make this assessment, there is wide variation in value estimates transmitted to the police. If insurance payments are involved, there is an even greater likelihood that the estimated value of stolen property will be exaggerated. It thus becomes difficult to make any rational comparisons over time within a given community. Inter-city comparisons are even more apt to result in serious distortions. Beginning in 1973, the distinction between petty and grand larceny will no longer be required in reporting property thefts.

TABLE 7.8

CRIMES AGAINST PROPERTY--LARCENY
1960-1970

	1960	1970	Percent Increase 1960-1970
UNITED STATES			
Population	179,323,175	203,184,772	
Rate/100,000	282.9	861.2	204
All Cities over 250,000 Population			
Population	35,337,512	42,181,000	
Rate/100,000	477.5	1290.1	170
Albuquerque			
Population	201,189	243,751	
Rate/100,000	518.0	1992.2	285
Atlanta			
Population	487,455	496,973	
Rate/100,000	531.3	1459.0	175
Denver			
Population	493,887	514,678	
Rate/100,000	513.3	2053.5	300
Kansas City, Missouri			
Population	475,539	507,087	
Rate/100,000	751.8	1328.4	77
Kansas City, Kansas			
Population	121,901	168,213	
Rate/100,000	76.3	573.7	652
Milwaukee			
Population	741,324	717,372	
Rate/100,000	353.7	1304.1	269
Nashville			
Population	170,874	448,003	
Rate/100,000	629.7	980.8	56
San Diego			
Population	573,224	696,769	
Rate/100,000	490.9	1523.2	210

Because of the inflationary factor, we cannot be certain that there has been an actual increase in the level of reported larcenies over the decade. Ambiguities in reporting larcenies makes the statistics on the incidence of such events extremely hazardous to interpret and of dubious value for purposes of meaningful comparison.

SUMMARY

The Eight Cities Compared

Table 7.8 compares the relative rank order standing of the eight cities on the three index crimes most frequently reported to the police. Of the seven index crimes, the most highly reported are homicide, auto theft, and robbery in that order.

The cities were ranked from high to low on each of the three crimes. Thus, San Diego had the lowest report rate for the crimes of homicide and auto theft and Milwaukee had the lowest rate for robbery. Atlanta had the highest homicide rate, Denver had the highest rate for auto thefts and Kansas City, Missouri, had the highest robbery rate.

TABLE 7.9

RANK ORDER FROM LOW TO HIGH
INDEX CRIMES REPORTED TO POLICE IN 1970 BY CITY

City	Homicide	Auto Theft	Robbery	Average Rank
San Diego	1	1	2	1.3
Milwaukee	2	2	1	1.7
Albuquerque	3	3	3	3.0
Nashville	5	4	4	4.3
Kansas City, Kansas	4	7	5	5.3
Denver	6	8	6	6.7
Atlanta	8	5	7	6.7
Kansas City, Missouri	7	6	8	7.0

The last column in Table 7.8 is an average of the ranks for the three crimes. This provides a rough measure of the relative crime levels in the eight cities as reflected in the police statistics.

The validity of these rank positions is problematic since the level of unreported crime was not ascertained. Furthermore, the accuracy of reporting practices is known to vary by reporting jurisdiction. Finally, the crimes selected for comparison constitute only a small portion of total city crime. Yet, despite these caveats, a closer approximation of the comparative crime levels in the eight cities is possible through the employment of indirect sources of evidence.

One such source is from a survey conducted by the National League of Cities, Urban Observatory program in the summer of 1970. Among the questions asked of a random sample of households were several related to public safety. A key question asked of all respondents was "How safe do you feel walking around your neighborhood alone at night - very safe, pretty safe, pretty unsafe, or very unsafe?" The study was done simultaneously in the eleven Observatory cities including the eight surveyed in this study. A summary of the resulting responses to this key question are given in Table 7.9.

The data clearly shows considerable disparity in the subjective feelings about the level of personal safety in the eight cities. Respondents in San Diego and Albuquerque experienced relatively high levels of personal security when compared with respondents in Kansas City metropolitan area. Approximately one-third of the San Diego and Albuquerque respondents said they felt very safe walking the streets of their neighborhoods alone at night and less than 10% said they felt very unsafe. The data from the Kansas City metropolitan area were in the reverse direction;

approximately 30% of the respondents said they felt very unsafe and less than 16% said they felt very safe.

TABLE 7.10

SUBJECTIVE FEELINGS ABOUT PERSONAL SAFETY IN THE EIGHT CITIES (Percent of Respondents)

City	Very Safe	Pretty Safe	Pretty Unsafe	Very Unsafe	No Response
San Diego	29.2%	46.8%	11.4%	9.7%	2.8%
Albuquerque	30.7	45.1	13.3	8.5	2.3
Milwaukee	24.6	41.4	16.6	16.4	0.9
Nashville	18.2	41.0	16.3	20.8	3.8
Denver	14.7	43.7	14.5	23.2	3.9
Atlanta	16.2	37.5	18.4	24.5	3.6
Kansas City, Missouri	15.8	36.8	17.6	29.8	---
Kansas City, Kansas	10.3	43.2	17.3	28.8	0.5

When the cities were rank ordered after combining the "feel very safe" and "pretty safe" responses, the result as shown in Table 7.10 was not too different from the ranking shown in Table 7.8 for selected FBI crime data.

The Spearman rank order correlation test for small samples yielded a value for r_s of .887.[22] For this sample, the result means that there is no significant difference in the rankings. The results of the two methods for ranking are so close that either method could have been used with very little difference in outcome.

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[22] Sidney Siegal, Nonparametric Statistics for the Behavioral Sciences, New York: McGraw-Hill Book Company, 1956, pp. 202-213.

TABLE 7.11

COMPARATIVE RANK ORDER OF THE EIGHT CITIES ON AVERAGE OF THREE INDEX CRIMES AND SUBJECTIVE PERCEPTION OF LEVEL OF PERSONAL SAFETY--1970

	Rank Order	
City	Average Index Crime Ranking (See Table 7.8)	Combined Percentage of Those Who Felt Very Safe or Pretty Safe (See Table 7.9)
San Diego	1	1
Milwaukee	2	3
Albuquerque	3	2
Nashville	4	4
Kansas City, Kansas	5	7
Denver	6.5	5
Atlanta	6.5	6
Kansas City, Missouri	8	8

San Diego and Milwaukee appear to be safer places to live than Kansas City, Missouri. However, in light of the previous discussion, such a conclusion should be regarded with caution.

The three index crimes of homicide, robbery, and auto theft, which were selected for one method of ranking, constitute only a small part of total crime. Furthermore, the subjective rankings of personal safety may or may not reflect the true level of crime in a community Respondent may have the feeling of being safe in a very hostile environment or may feel insecure in an objectively salutory environment.

subjective evaluations and objective facts are not always congruent. Finally, both poor reporting practices on the part of police jurisdictions and the uneven reporting practices of victims all tend to distort official statistics. REcent evidence on this point from a Bureau of the Census survey of victims highlights this source of inaccuracy.

The Bureau of the Census Survey. Table 7.11 gives summary comparisons of the disparity between actual and reported crime in the nation's five most populous cities during 1972.[23]

The discrepancy between the number of crimes reported by the FBI and the Census Bureau Survey of victim reported crimes shows differences for the five cities which vary between 214% for New York and 505% for Philadelphia.

TABLE 7.12

REPORTS OF CRIME Vs. CENSUS BUREAU SURVEY
1972

City	FBI's Uniform Crime Reports	Census Bureau Survey	Percentage of Difference
Los Angeles	237,801	693,500	292%
Chicago	223,630	621,300	278
Detroit	128,996	345,600	268
New York	515,121	1,100,100	214
Philadelphia	78,457	396,400	505

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[23] Los Angeles Times, April 15, 1974.

For every crime which occurred in New York City, only one-half were known to the police but in Philadelphia, only one out of five was either knwon or recorded by the police. These discrepancies may indicate that New Yorkers are either more likely to report crimes than are Philadelphians or that the Philadelphia police department is deficient in its bookkeeping practices or that Philadelphians are not as apt to furnish information. Whatever the explanation, the point is that no single data source is sufficient for drawing reliable conclusions about the actual level of crime in a given community.

In making inter-city comparisons, the problem is compounded. Crime studies at the local level should include many sources of information to approximate the true state of affairs. At the very least, police data should be supplemented by periodic victimization studies which contain questions about the respondent's actual experience as a target of crime as well as his subjective feelings about his g-eneral level of personal safety.

Chapter 8

HOUSING INDICATORS

A number of suggestions have been made for measuring the adequacy of the existing housing supply. Most existing measures describe the physical structure of housing units. Thus, for example, we have measures of substandardness or measures which relate to the age of dwelling units, older housing being defined as those built before 1950. Dimensions included in the latest census were the number of housing units that lacked a complete bathroom for exclusive use or which were characterized by inadequate heating or the absence of complete kitchens or which lacked kitchens for exclusive use.

In addition to measures of physical inadequacy and age, indices are available of the degree to which housing is overcrowded (the overcrowding index being defined as the percent of occupied housing units having 1.01 or more persons per room) and measures of the comparative ratios of renter to owner-occupied homes disaggregated by race, etc.

Census data on housing adequacy have been criticized on several grounds. The most important is that such measures do not normally encompass environmental defınciencies that contribute to the lack of livability in given neighborhoods. Such neighborhood deficiencies may arise from poor sanitation services, poor maintenance of pavements and streets, inadequate sewage and drainage facilities, the presence of noxious air, excessive noise, the danger of assault, robbery, juvenile delinquency, narcotics traffic and addiction, and high concentrations of unemployment.[1]

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[1] F. S. Kristoff, "Urban Housing Needs through the 1980s: An Analysis and Projection," Research Report 10, Washington, D.C.: National Committee of Urban Problems, 1968.

Even new housing may not be highly valued by its occupants if the home is located in an area with poor access roads, inadequate shopping areas, or which lack recreational facilities and schools.[2]

The problem of defining housing adequacy is exceedingly complicated and no easy solutions will be found. In the absence of better output measures, Marcuse urges that "our existing input measures should not be dropped, lest even the little that public policy is now achieving in meeting the housing and residential needs of the entire community be diminished. But (he adds) the search for better indicators and a clearer statement of goals and outputs is long overdue."[3]

Two important housing indicators are associated with occupancy. These are housing tenure and the persons per room ratio. Housing tenure refers to whether the dwelling is owned by its occupants or rented. The persons per room ratio is an index of overcrowding. Each of these will be discussed in turn.

Housing Tenure

The Bureau of the Census has been collecting information on housing tenure since 1890. In that year 48% of occupied dwelling units were lived in by their owners.

Between 1890 and 1940 owner occupied housing varied between a high of 48% in 1890 to a low of 43.6% in 1940. In the decade between 1940 and 1950 the majority of persons in the United States were living in owner occupied housing. In 1950, 55% of all occupied housing units were owner occupied. At the time of the 1960 census, occupancy rose to 61.9% and at the time of the 1970 census increased an additional percentage point to 62.9%. The sharpest rise in home ownership occurred between the years 1940 and 1950 as a result of liberalized programs for home financing and the rise in the level of personal income. The total supply of occupied housing in 1970 was 63,417,000 units of which 39,862,000 were owner occupied.

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[2] Robert Ontell, Toward a Social Report for the City of San Diego, The Urban Observatory of San Diego, March 1972.

[3] Peter Marcuse, "Social Indicators and Housing Policy," Urban Affairs Quarterly, Vol., No. 2 (December 1971), pp. 194-195.

Home ownership was most prevalent in the Northcentral states at the time of the 1970 census with 68.0% of owner occupancy. The lowest proportion of home ownership was in the NOrtheastern states with 57.6% owner occupied dwellings.

Home ownership has been increasing rapidly outside of standard metropolitan statistical areas. Between 1960 and 1970 owner occupied housing outside the SMSAs rose from 66.8% to 71.6%. Home ownership inside the SMSAs rose only slightly from 59.[illegible] to 60%. The level of ownership in the Central cities has been consistently lower than in the SMSAs outside the central cities. By 1970, only the states of New York and Hawaii had more renters than homeowners.

Housing Tenure in the Eight Cities

Table 8.1 gives information on the number and percent of owner and renter occupied units in the United States and in the eight city study for the 1960 and 1970 census periods.

In 1960, 61.9% of all housing units in the United States were owner occupied. Of the eight cities studied only Albuquerque with 69.1% owner occupied units and Kansas City, Kansas, with 64.4% owner occupied units exceeded the percentage of such dwelling units in the United States.

TABLE 8.1

NUMBER AND PERCENT OF OWNER AND RENTER OCCUPIED HOUSING UNITS
Total Housing

Population Entity	Owner 1960	Occupied 1970	Renter 1960	Occupied 1970
United States				
Number (In Thousands)	32979	39862	20227	23555
Percent	16.9	62.9	38.1	37.1
Albuquerque				
Number	39592	48830	17695	26826
Percent	69.1	64.5	30.9	35.5
Atlanta				
Number	66550	66789	79365	95502
Percent	45.6	41.2	54.4	58.9
Denver				
Number	88615	93149	76920	92182
Percent	53.5	50.3	46.5	49.7
Kansas City, Missouri				
Number	89194	102481	76568	73892
Percent	53.8	58.1	46.2	41.9
Kansas City, Kansas				
Number	24925	36600	13786	18396
Percent	64.4	66.6	35.6	33.4
Milwaukee				
Number	111871	111983	119116	124998
Percent	48.4	47.3	51.6	52.7
Nashville				
Number	69865	83694	44770	56715
Percent	60.9	59.6	39.1	40.4
San Diego				
Number	92478	115094	82877	111912
Percent	52.7	50.7	47.3	49.3

Sources: U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States 1971, 92d Annual Edition, Washington, D.C.: Government Printing Office, July 1971, p. 672, Table 1109.

U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

Of the remaining cities, Denver, Kansas City, Missouri, and San Diego also had a majority of owner occupied dwellings. Atlanta, Milwaukee, and Nashville had less than 50% of owner occupied dwellings.

In 1970, when owner occupied dwellings constituted 62.9% of all housing units in the United States, Albuquerque and Kansas City, Kansas, were once again, the only cities among the eight studied, which exceeded the percentage of such units in the United States. The number of owner occupied units in Albuquerque declined by 6.7% during the ten year period, while the number of such units increased by 3.4% in Kansas City, Kansas. Denver, Kansas City (Missouri), Nashville, and San Diego each had more than 50% owner occupied dwellings in 1970. Only Atlanta and Milwaukee had a preponderance of renter occupied dwellings.

Nashville experienced a 48% rise in the number of owner occupied dwellings during the decade. The number of dwelling units in that jurisdiction increased from 20,591 to 83,694. The sharp rise in the number of dwelling units and the steep rise in the percentage of owner occupied dwellings is related to the fact that the geographic boundaries of Nashville were expanded during the decade. The enlarged jurisdiction now contains suburban and rural areas which traditionally have a preponderance of owner occupied dwellings. It is this fact which accounts for the shift in the balance between owner occupied and renter occupied housing units in that area.

With the exception of Nashville and the Kansas City metropolitan area, all other cities experienced a decline in the number of owner occupied dwellings during the decade. The largest decline--9.6%--was in Atlanta and the smallest decline was in Milwaukee with a drop of 2.3%.

Housing Tenure and Minority Population Groups in the Eight Cities

Table 8.2 gives information on the number and percent of Black and Spanish language and surname populations in the United States and in the eight cities for the census periods 1960 and 1970 with respect to housing tenure.

Housing tenure among Blacks. With the exception of Kansas City, Kansas, Table 8.2 shows that Blacks are far more likely to be renters than homeowners. In fact, when Blacks are compared to Whites, with respect to housing tenure, there is almost a complete reversal in the experience of the two groups. For example, in 1960 38.1% of all dwelling units in the United States were rented. In that same year 38.4% of all housing units in which Blacks lived were owner occupied. In other words, in that year the proportion of Blacks who owned their own homes was about the same as the proportion of all Americans who lived in rental units. However, since 1960, there has been a decided shift in the owner-renter balance among Blacks. During the decade, homeownership among Blacks increased from 38.4% to 41.5%. During the decade seven of the eight cities studied showed similar increases in the percentage of homeownership. In 1960, only Kansas City, Kansas, had a Black homeownership rate which approximated that for the country as a whole. In that year, 61.1% of all Blacks lived in owner-occupied dwellings as compared with 61.9% of all persons who lived in owner-occupied housing. When Black homeownership in the cities was compared with the percentage of Black homeownership in the United States, only Denver, Kansas City (Missouri), Kansas City (Kansas), and San Diego had a percentage of Black owned dwellings equal to or exceeding the percentage of Black-owned dwellings in the United States. Atlanta, with 29.2% of Black-owned homes was lowest among the eight cities.

In 1970 when homeownership among Blacks was 41.5% in the United States, only Atlanta, Milwaukee and Nashville had lower percentages of homeownership. Milwaukee supplanted Atlanta as the city with the lowest percentage of ownership by Blacks. Kansas City, Kansas, had the highest percentage of Black homeownership in 1970. While 57.9% of Blacks owned their own homes in Kansas City, Kansas, in 1970 this represented a decline from the 61.1% in 1960. It was the only city which showed a decline in both number and percentage of Black owned housing units. The remaining cities all showed substantial increases in ownership. Milwaukee made the greatest relative progress. In that city, homeownership by Blacks increased by 36%. Black homeownership in San Diego increased by only 10% but even this was above the national average increase of only 8%. Increases of 20% or more were registered in Albuquerque, Atlanta, Denver and Kansas City, during the decade. It was noted earlier that Kansas City, Kansas, suffered a decline in the percentage of homeownership among Blacks. While the drop in homeownership was 5%, Kansas City, Kansas, nevertheless made the best percentage showing among the eight cities. It was the only community which had a percentage of Black owned homes which approximated the average for the United States.

The rise in homeownership among Blacks in metropolitan centers runs counter to the national trend. As noted earlier, the percentage of homeownership among all persons is declining in the big cities. The reversal pattern for Blacks may be accounted for by the rising levels of income which occurred among all sectors of the population during the decade. Also, the building boom during the sixties made it possible for Blacks to buy older dwelling units vacated by Whites who moved into newer housing.

Housing tenure among Spanish language and surnamed populations in the eight cities. Only three of the eight cities had substantial numbers of Spanish language or surname populations. Data was available on the remaining five cities for the year 1970 only. Table 8.2 gives information on the three cities for which data were available for both census periods. Of these cities, only Albuquerque had homeownership patterns among Hispanic Americans which was substantially the same as the average for all Americans. In 1960, 65.7% of Hispanic Americans in Albuquerque owned their own homes. In 1970, 63.4% were homeowners. While this represented a slight decline over the decade, the percentages are nevertheless somewhat above the national average for all homeowners in both census years. The data for Denver and San Diego evidenced a homeownership pattern among Hispanic Americans which was similar to that for Blacks. Homeownership increased slightly in both cities over the decade. In Denver, about 50% of all dwellings were owner occupied in both 1960 and 1970. The percentage of homeowners among Hispanic Americans was about 40%. As can be seen in Table 8.2 the percentage of homeowners among Hispanic Americans in San Diego, while slightly below the homeownership levels for all persons is not too far behind. In 1970, 50.7% of all dwellings in San Diego were owner occupied and 48% of those of Spanish language or surname owned their own homes. In 1970 Hispanic Americans were somewhat behind Blacks with respect to homeownership status in Denver but in San Diego the reverse was true. There, 44.2% of Blacks were homeowners as compared with 48% of those of Spanish language or surname. However, in both cities, Blacks seemed to be making more rapid progress than Hispanic Americans with respect to this variable. In Denver homeownership among Blacks increased by 21% as compared with

TABLE 8.2

NUMBER AND PERCENT OF NEGRO, SPANISH LANGUAGE AND SURNAME OWNER AND RENTER OCCUPIED HOUSING UNITS

Population Entity	Negro				Spanish Language or Surname			
	Owner Occupied		Renter Occupied		Owner Occupied		Renter Occupied	
	1960*	1970	1960*	1970	1960	1970	1960	1970
U.S.								
Number (in Thousands)	1974	2916	3171	4028	NA	NA	NA	NA
Percent	38.4	41.5	61.6	58.5				
Albuquerque								
Number	580	730	933	789	6906	14232	3607	8219
Percent	38.3	48.1	61.7	51.9	65.7	63.4	34.3	36.6
Atlanta								
Number	14089	26583	34099	44586	NA	368	NA	1055
Percent	29.2	37.4	70.8	62.6	NA	25.9	NA	74.1
Denver								
Number	3939	6725	6317	7707	4066	9461	6252	13591
Percent	38.4	46.6	61.6	53.4	39.4	41.0	60.6	59.0
Kansas City, Missouri								
Number	11634	18537	14071	15141	NA	1791	NA	1482
Percent	45.3	55.0	54.7	45.0	NA	54.7	NA	45.3
Kansas City, Kansas								
Number	4860	6050	3090	4398	NA	877	NA	405
Percent	61.1	57.9	38.9	42.1	NA	68.4	NA	31.6
Milwaukee								
Number	3853	9076	12069	18464	NA	1120	NA	2441
Percent	24.2	33.0	75.8	67.0	NA	31.5	NA	68.5
Nashville								
Number	5869	9606	11623	14607	NA	362	NA	412
Percent	33.6	39.7	66.4	60.3	NA	46.8	NA	53.2
San Diego								
Number	4459	6518	6686	8218	4381	10891	4897	11822
Percent	40.0	44.2	60.0	55.8	47.2	48.0	52.8	52.0

*For 1960, The U. S. figures include "Negro and other." The figures for the cities are for "nonwhite."

SOURCES: U.S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States 1971, 92d Annual Edition, Washington, D. C.: Government Printing Office, July 1971, p. 672, Table 1109.

U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

a 4% increase for Hispanic Americans. In San Diego, homeownership for Blacks during the decade, increased by 10% as compared with an increase of less than 2% for Hispanic Americans.

Overcrowded Housing--Persons-per-Room Ratio

An important measure of housing adequacy is the index of overcrowding. This index, designated as the persons-per-room ratio, assumes an equal distribution of persons and rooms. Thus, a dwelling unit with six rooms and six persons or less is assumed to be adequate regardless of the size or age of the dwelling unit, the relationship of the occupants or their sexual distribution. Thus, more than six persons in a six-room dwelling unit is considered inadequate.

By 1970 census definition, "persons occupying the housing unit include not only occupants related to the head of the household but also any lodgers, roomers, boarders, partners, wards, foster children and resident employees who share the living quarters of the household head . . ." The census also defines rooms to be counted as including "whole rooms used for living purposes, such as living rooms, dining rooms, kitchens, bedrooms, finished recreation rooms, family rooms, etc. Not counted as rooms are bathrooms, kitchenettes, strip or pullman kitchens, utility rooms, unfinished attics, basements, or other space used for storage." The persons-per-room ratio is computed by "dividing the number of persons in the unit by the number of rooms in the unit." The figures shown, therefore, refer to the number of housing units having the specified ratio of persons per room.[4]

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[4] Bureau of the Census, Census Tracts, San Diego, California, PHC (1)-188, Appendix B, p. 10.

Overcrowding results from at least two causes. Overcrowding occurs during the periods of depression when, as a result of economic pressures, families tend to "double-up." Doubling-up is usually accompanied by an increase in the vacancy rate. During periods of prosperity, "undoubling" occurs with a consequent decrease in the vacancy rate, sometimes leading to housing shortages. During periods of shortage, families tend to double-up, not because of economic pressures but because of the lack of vacant housing.

Overcrowding has not been an especially acute problem in the United States as compared with other industrialized societies. However, overcrowding in this country affects different groups of the population unevenly. Persons from low income and minority backgrounds tend to experience more overcrowding than other sectors of the population. The housing boom following World War II and the tendency for family units to be of smaller size has led to a continuous reduction in the percentage of overcrowding since 1940. In 1970, only 7% of all housing units in the United States were overcrowded.[5]

Housing Overcrowding in the Eight Cities

In 1960, overcrowding in the eight cities varied between a low of 8.2% for Denver to a high of 16.7% for Nashville. Table 8.3 shows that each of the eight cities registered a substantial decrease in the percentage of overcrowded units in 1970 as compared with 1960. The largest percentage reduction in overcrowding occurred in Nashville which had the largest percentage of overcrowding in 1960. Overcrowding in that city was reduced from 16.7% in 1960 to 7.4% in 1970, a 56% drop. The decrease in overcrowding was also substantial for Albuquerque which recorded a 40% drop from 14% of housing units overcrowded in 1960 to 8.4% in 1970.

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[5] Bureau of the Census, Statistical Abstract of the United States, 1971, p. 674, Table No. 1111.

When o-ercrowding in the eight cities is compared with the percentage rate for the United States, Table 8.3 shows that only Denver, Kansas City, Missouri, and San Diego had lower percentages of overcrowding than the average for the United States. Of the eight cities in 1970, Atlanta was the most overcrowded with 11% of such units. The city with the least overcrowding was Denver with 5.5%.

The decline in overcrowding is related to a number of factors characterizing the decade of the sixties. The number of occupied housing units increased by over ten million during the decade, a 19.6% increase, while the population only increased by 13.3%; home construction out-paced the growth in the population. Another factor related to overcrowding is income. When income rises, families are able to acquire better housing as well as less crowded housing. One index of increased improvement in economic circumstances is the number and percent of persons who live at or below the poverty level. Approximately ten million persons were lifted out of poverty during the decade. There was also a rise in real income for all sectors of the population during the decade. These and other circumstances account for the improved living circumstances with respect to the indicator of overcrowding for all sectors of the population. Low income and minority persons shared in the benefits with respect to this variable as may be seen from Table 8.4 and 8.5.

TABLE 8.3

OVERCROWDED HOUSING UNITS
Number and Percent
(1.01 Persons or More per Room)

	All Occupied Housing Units 1960	All Occupied Housing Units 1970	Percent Decrease
U.S.			
Occupied Housing Units	53,024,000	63,450,000	
Number of Overcrowded Units	NA	4,441,500	
Percent Overcrowding	NA	7.0	
Albuquerque			
Occupied Housing Units	57,287	75,656	
Number of Overcrowded Units	8,040	6,323	
Percent Overcrowding	14.0	8.4	40%
Atlanta			
Occupied Housing Units	145,915	162,291	
Number of Overcrowded Units	23,577	17,815	
Percent Overcrowding	16.2	11.0	32
Denver			
Occupied Housing Units	165,535	185,331	
Number of Overcrowded Units	13,603	10,267	
Percent Overcrowding	8.2	5.5	33
Kansas City, Missouri			
Occupied Housing Units	165,767	176,373	
Number of Overcrowded Units	14,517	11,416	
Percent Overcrowding	8.8	6.5	26
Kansas City, Kansas			
Occupied Housing Units	38,711	54,896	
Number of Overcrowded Units	4,883	4,700	
Percent Overcrowding	12.6	8.6	32
Milwaukee			
Occupied Housing Units	230,987	236,981	
Number of Overcrowded Units	19,899	17,302	
Percent Overcrowding	8.6	7.3	15
Nashville			
Occupied Housing Units	50,990	140,409	
Number of Overcrowded Units	8,534	10,441	
Percent Overcrowding	16.7	7.4	56
San Diego			
Occupied Housing Units	175,355	227,006	
Number of Overcrowded Units	16,359	15,228	
Percent Overcrowding	9.3	6.7	28

SOURCE: U. S. Census

Housing Overcrowding and the Minorities in the Eight Cities

The reduction in housing overcrowding for the two largest minority populations in the eight cities reflected the improvement for the entire population. In 1960 the range in overcrowding for the Black minority was from a low of 16.3% in Kansas City, Missouri, to a high of 32.7% in Atlanta. By 1970 the range in percentage of overcrowding was substantially reduced. Denver had the least overcrowding with 10.6% and there was no city among the eight in which overcrowding was greater than 20%. Atlanta had the highest level of overcrowding with 19.4%. San Diego's level of overcrowding was 18.3% and Albuquerque's 18.1%.

When 1960 was compared to 1970, Table 8.4 shows that the reduction in overcrowding was quite substantial. The reduction in overcrowding in Albuquerque and Atlanta over the decade was 41%. Other notable reductions took place in Denver and Kansas City, Kansas, each with a 36% decrease in overcrowding. San Diego with an 18% decrease registered the lowest relative level of improvement.

In the three cities with the largest number of Hispanic Americans, namely Albuquerque, Denver, and San Diego, substantial reductions in the percentage of overcrowding occurred as can be seen in Table 5.5. In 1960 more than one-fourth of the Hispanic population in the three communities had overcrowding of over 25%. Albuquerque, with 35.5% overcrowding had the poorest record and San Diego with 26.5% had the lowest level of overcrowding housing for Hispanic Americans. By 1970 the percentage of overcrowding dropped 47% in Albuquerque, 43% in Denver and 24% in San Diego. Denver had the lowest percentage of overcrowding--17.3% and San Diego had the highest percentage of overcrowding--25.5%.

TABLE 8.4

OVERCROWDED HOUSING UNITS (Black)
Number and Percent
(1.01 Persons or More per Room)

	All Negro Occupied Housing Units 1960	1970	Percent Decrease
U.S.			
Occupied Housing Units	5,144,000	6,944,000	
Number of Overcrowded Units	NA	NA	
Percent Overcrowding	NA	NA	
Albuquerque			
Occupied Housing Units	1,513	1,519	
Number of Overcrowded Units	646	275	
Percent Overcrowding	30.7	18.1	41%
Atlanta			
Occupied Housing Units	48,188	71,169	
Number of Overcrowded Units	15,747	13,815	
Percent Overcrowding	32.7	19.4	41
Denver			
Occupied Housing Units	10,256	14,432	
Number of Overcrowded Units	1,706	1,522	
Percent Overcrowding	16.6	10.6	36
Kansas City, Missouri			
Occupied Housing Units	25,719	33,678	
Number of Overcrowding Units	4,180	4,313	
Percent Overcrowding	16.3	12.8	21
Kansas City, Kansas			
Occupied Housing Units	7,950	10,448	
Number of Overcrowded Units	1,680	1,399	
Percent Overcrowding	21.1	13.4	36
Milwaukee			
Occupied Housing Units	15,922	27,540	
Number of Overcrowded Units	3,671	4,335	
Percent Overcrowding	23.1	15.7	3
Nashville			
Occupied Housing Units	17,492	24,213	
Number of Overcrowded Units	4,251	4,245	
Percent Overcrowding	24.3	17.5	28
San Diego			
Occupied Housing Units	11,145	14,736	
Number of Overcrowded Units	2,478	2,702	
Percent Overcrowding	22.2	18.3	18

SOURCE: U. S. Census

TABLE 8.5

OVERCROWDED HOUSING UNITS (Hispanic)
Number and Percent
(1.01 Persons or More per Room)

	All Spanish Occupied Housing Units		Percent Decrease
	1960	1970	
Albuquerque			
Occupied Housing Units	10,513	22,451	47%
Number of Overcrowded Units	3,729	4,343	
Percent Overcrowding	35.5	19.3	47
Denver			
Occupied Housing Units	10,318	23,052	
Number of Overcrowded Units	3,122	3,991	
Percent Overcrowding	30.3	17.3	43
San Diego			
Occupied Housing Units	9,278	22,713	
Number of Overcrowded Units	2,461	4,663	
Percent Overcrowding	26.5	20.5	24

SOURCE: U.S. Census

While both Blacks and Hispanic Americans registered substantial improvement with respect to this condition they still had a long way to go to catch up with the majority population.

Vacant Housing

In every community, a certain proportion of housing must be available to meet the mobility needs of the population. Families may wish to change their location of residence for many reasons, such as the desire to be closer to work, to schools, to shopping facilities or to provide additional space for expanding families. Beyer suggests a "vacancy allowance" for rental units of about 6% and about 2% for units which are for sale. "Since it may be anticipated that approximately three-fourths of the new units would be sold and the remaining one-fourth rented, an overall 3% vacancy ratio is in order for estimating purposes."[6]

The presence of high vacancy rates does not necessarily signify a favorable situation for prospective consumers. Vacancies may occur as a result of a serious downturn in the business cycle, causing some families to "double-up" or to simply abandon their homes. More often, vacancies result from a temporary oversupply of new houses. In recent years, vacancies have also resulted from voluntary abandonment of homes in the high crime areas of large urban communities. Abandoned houses often become targets for vandals and thieves who scavenge fixtures and plumbing for resale. More often than not, such abandoned dwellings are condemned by local government jurisdictions and razed.

Table 8.6 gives information on the 1960 and 1970 census counts of vacant housing for the United States and for the eight cities studied in this report. The total vacancy rate for the eight cities in 1960 varied between a low of 4.4% in Milwaukee to a high of 8.8% in San Diego. San Diego was the only city with a vacancy rate higher than the national average of 7.4% for that year. The remaining cities had vacancy rates lower than the United States rate.

In 1970 the vacancy rate for year-round housing units in the United States dropped to 6.3%. The vacancy rates in the eight cities varied between a low of 4.0% in Albuquerque to a high of 8.3% in Kansas City, Missouri. With the exception of the Kansas City metropolitan area, all the communities studied experienced a drop in the vacancy rate during the decade between 1960 and 1970.

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[6] Glenn H. Beyer, Housing and Society, The MacMillan Company, New York, 1966, p. 125.

Vacant housing units were disaggregated by units for sale and units for rent. For the census periods 1960 and 1970 the percentage of units for sale ranged between a low of 0.9% for Nashville in 1970 to a high of 2.3% for San Diego in 1960. While the average for vacant sales property was somewhat lower than the 2% optimal "vacancy allowance" suggested by Beyer. Since the vacancy rate for sales units was taken at only two points in time, no meaningful conclusions can be drawn from the data.

The optimal percentage of rental vacancies suggested by Beyer is 6%. At the time of the 1960 census, the United States vacancy rate was 7.4%. In 1970 it dropped to 4.9%. Among the eight cities in 1960, San Diego and Albuquerque had the highest rental vacancy rental rate, 11.6% and 10.1% respectively. The only other city that year with a higher rate than the United States average was Kansas City, Missouri.

In 1970 the vacancy rate for all cities with the exception of Milwaukee, with a rate of 4.4%, were higher than the average for the United States. The highest vacancy rate was in Kansas City, Missouri, with 12.5%. Kansas City, Kansas, San Diego and Nashville also had relatively high vacancy rates. Again, no conclusions can be drawn from the data since these rates fluctuate widely over relatively short periods of time depending on a variety of idiosyncratic conditions which characterize the local economies. In the absence of specific information concerning the quality of vacant rentals, the housing needs of the local populations, the cost of rental units, etc., the inter-city comparisons which employ this variable can yield no meaningful insights related to the quality of life with respect to housing adequacy or availability.

TABLE 8.6

VACANCIES, NUMBER AND PERCENT
1960 - 1970

	Total Year Round Housing Units		Total Vacant Housing Units		Vacant For Sale Only		Vacant For Rent	
	1960	1970	1960	1970	1960	1970	1960	1970
U.S.								
Number	NA	67,608,000	NA	NA	NA	NA	NA	NA
Percent		100.0	7.4	6.3	1.2	1.0	7.4	4.9
Albuquerque								
Number	60,930	78,783	3,643	3,127	738	566	1,980	1,593
Percent		100.0	6.0	4.0	1.8	1.2	10.1	5.6
Atlanta								
Number	154,097	170,873	8,182	8,582	1,579	817	4,131	6,010
Percent		100.0	5.3	5.0	2.3	1.2	5.0	5.9
Denver								
Number	174,124	193,736	8,589	8,405	755	817	5,896	5,610
Percent		100.0	4.9	4.3	0.9	0.9	7.1	5.7
Kansas City, Missouri								
Number	178,350	192,284	12,583	15,911	1,397	1,826	8,395	10,562
Percent		100.0	7.1	8.3	1.5	1.8	9.9	12.5
Kansas City, Kansas								
Number	40,591	57,848	1,880	2,952	260	505	889	1,650
Percent		100.0	4.6	5.1	1.0	1.4	6.1	8.3
Milwaukee								
Number	241,593	246,005	10,606	9,024	1,249	838	6,651	5,697
Percent		100.0	4.4	3.7	1.1	0.7	5.3	4.4
Nashville								
Number	53,623	147,223	2,633	6,814	212	791	1,393	4,342
Percent		100.0	4.9	4.6	1.0	0.9	4.4	7.1
San Diego								
Number	192,269	241,010	16,914	14,004	3,015	2,267	10,822	6,672
Percent		100.0	8.8	5.8	3.2	1.9	11.6	7.2

SOURCES: U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States 1971, 92d Annual Edition, Washington, D. C.: Government Printing Office, July 1971, p. 671, Tables 1105 and 1106.

U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1960 and 1970.

Age of Housing

Caution should be exercised in interpreting the data on the age of housing. The age of housing units is significant only as it relates to other characteristics of the housing supply, especially the quality of the units.

> It is of questionable value to know the number of units over thirty years old without also knowing their condition, size, location, type, and other factors. The age of an existing house may be a rough index of its condition, but age alone will not measure the adequacy of the dwelling or its structural soundness.[7]

Beyer makes the point that many frame dwellings have been in continuous use for over one hundred years and are still "completely adequate." On the other hand, there are many new homes "that are run-down and inadequate at a quarter of that age. Sheer youth in housing is no guarantee that the house is good." In addition, the neighborhood in which the home is located is an important factor to consider along with the age of the dwelling. "Homes are commonly judged by the 'company they keep' rather by their age."[8]

Much more information is needed on the adequacy of housing in addition to the age of the dwelling unit. Among available measures of adequacy are the presence or absence of plumbing facilities, kitchen facilities, and whether or not access to kitchen facilities requires movement through other living quarters.

Without minimizing the cautions urged by Beyer, it can be maintained with considerable legitimacy that the bulk of older housing is occupied by low income and minority families and that the condition of such housing is inferior to housing of more recent construction.

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[7] Ibid., p. 125.

[8] Ibid., p. 125.

Older housing includes all units built prior to 1949. Tables 8.7, 8.8, and 8.9 provide information on the number of homes built prior to 1949, those built between 1950 and 1959, and those constructed between 1960 and 1970. In addition to the disaggregation by percentage of homes constructed in each period data is also given on the proportions of older and newer housing occupied by Blacks and Hispanic-Americans at the time of the 1970 census.

In 1970, as Table 8.7 shows, the majority of housing structures--57%, were built prior to 1949. Another striking figure in Table 8.7 is the one which shows that 24%, almost one-quarter of all housing built in the United States, was erected in the decade between 1960 and 1970.

Among the eight cities, Milwaukee and Kansas City, Missouri, had the largest percentage of dwelling units built prior to 1949. Sixty-six percent of all housing units in Milwaukee were twenty or more years old at the time of the 1970 census and in Kansas City, Missouri, the percentage was 63.4%. Albuquerque and San Diego had the lowest percentage of older dwelling units, 28.9% and 36.5% respectively. These figures reflect the rapid growth in population and, therefore, of the rapid pace of construction in both those communities during the two decades between 1950 and 1970. Indeed, almost three-fourths of Albuquerque's housing supply was built since 1950 and in San Diego more than six out of every ten homes were built since 1950. It should also be noted that Nashville which also has a relatively low ratio of older housing had the most rapid growth in construction of housing in the 1960-1970 decade. Over one-third of Nashville's housing supply was built during that decade.

San Diego was a close second with 32.5% and Albuquerque followed close behind with 31.5% of its housing units built in the last census decade. Milwaukee which had the highest proportion of older units increased its housing supply by only 14.5% during the same period. It was the lowest percentage increase among the eight cities.

Table 8.8 and 8.9 give information on the age of the housing stock for Blacks and Hispanic-Americans at the time of the last census. In general Blacks occupied a large proportion of older housing when compared with the total population living in such housing. In Milwaukee two-thirds of the occupied housing units were built prior to 1949 but 88.5% of the housing units occupied by Blacks were that old. Only 5% of housing units occupied by Blacks were built between 1960 and 1970. In addition to Milwaukee, Kansas City, Missouri, and Kansas City, Kansas, also had large proportion of Blacks occupying older housing units in 1970. In both cities over three-fourths of the housing occupied by Blacks were built prior to 1949. The lowest percentages of Blacks living in older housing were in Albuquerque and San Diego with 38.1% and 40.2% respectively. Atlanta was the only city in which a small proportion of Blacks lived in older housing compared with the total number of such units in the community. While 48.6% of all units in Atlanta were built prior to 1949, only 43.9% of all housing occupied by Blacks were that old.

Table 8.9 gives comparable information on the age of the housing stock occupied by Hispanic-Americans. With the exception of Nashville and Atlanta, a larger proportion of Hispanic-Americans lived in older housing as compared with the proportion of the total population which lived in such housing. Hispanic-Americans fared best in Nashville with only 27.8% living in older housing. Only one-third of all units in

Nashville were built in the decade prior to the last census. When Blacks and Hispanic-Americans were compared to this variable the picture was mixed. Blacks fared somewhat better than Hispanic-Americans in Albuquerque, Atlanta, Denver, and San Diego. Blacks fared worse in Kansas City, Missouri, Kansas City, Kansas, Milwaukee and Nashville. However, in the decade between 1960 and 1970, a larger proportion Hispanic-Americans as compared with Blacks were in newer housing.

Summary

The data on age of housing shows that the older, slower growing cities have the highest proportion of older housing units and that, in most cases, a disproportionate share of such units are occupied by members of the largest ethnic minorities.

TABLE 8.7

AGE OF HOUSING STOCK
March, 1970

	Housing Built Prior to 1949	Housing Built Between 1950-1959	Housing Built Between 1960-1970
U.S.			
Number	36,147,690	12,049,230	15,220,080
Percent	57.0	19.0	24.0
Albuquerque			
Number	22,734	31,218	24,836
Percent	28.9	39.6	31.5
Atlanta			
Number	82,949	42,259	45,655
Percent	48.6	24.7	26.7
Denver			
Number	107,171	48,517	38,029
Percent	55.3	25.1	19.6
Kansas City, Missouri			
Number	121,886	36,373	34,017
Percent	63.4	18.9	17.7
Kansas City, Kansas			
Number	34,544	12,002	11,287
Percent	59.7	20.8	19.5
Milwaukee			
Number	162,273	48,052	35,670
Percent	66.0	19.5	14.5
Nashville			
Number	57,796	39,864	49,560
Percent	39.3	27.1	33.7
San Diego			
Number	87,985	74,702	78,247
Percent	36.5	31.0	32.5

SOURCE: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

TABLE 8.8

AGE OF HOUSING STOCK BLACK

	Housing Built Prior to 1949	Housing Built Between 1950-1959	Housing Built Between 1960-1970
U.S.			
Number	NA	NA	NA
Percent	NA	NA	NA
Albuquerque			
Number	577	581	358
Percent	38.1	38.3	23.6
Atlanta			
Number	31,186	19,331	20,481
Percent	43.9	27.2	28.9
Denver			
Number	8,794	4,424	1,310
Percent	60.5	30.5	9.0
Kansas City, Missouri			
Number	26,552	4,657	2,511
Percent	78.7	13.8	7.5
Kansas City, Kansas			
Number	7,989	1,008	1,424
Percent	76.7	9.7	13.7
Milwaukee			
Number	24,364	1,769	1,383
Percent	88.5	6.4	5.0
Nashville			
Number	12,029	5,748	6,423
Percent	49.7	23.8	26.5
San Diego			
Number	5,890	5,806	2,945
Percent	40.2	39.7	20.1

SOURCE: U. S. Department of Commerce, Bureau of the Census, Census Tracts for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

TABLE 8.9

AGE OF HOUSING STOCK
Hispanic-Americans

	Housing Built Prior to 1949	Housing Built Between 1950-1959	Housing Built Between 1960-1970
U.S.			
Number	NA	NA	NA
Percent	NA	NA	NA
Albuquerque			
Number	9,568	7,858	5,025
Percent	42.6	35.0	22.4
Atlanta			
Number	600	306	457
Percent	46.4	21.5	32.1
Denver			
Number	14,991	5,715	2,346
Percent	65.0	24.8	10.2
Kansas City, Missouri			
Number	2,384	453	404
Percent	73.6	14.0	12.5
Kansas City, Kansas			
Number	887	196	199
Percent	69.2	15.3	15.5
Milwaukee			
Number	2,778	348	435
Percent	78.0	9.8	12.2
Nashville			
Number	215	169	390
Percent	27.8	21.8	50.4
San Diego			
Number	10,484	6,718	5,511
Percent	46.2	29.6	24.3

SOURCE: U. S. Department of Commerce, Bureau of the Census, *Census Tracts* for Albuquerque, Atlanta, Denver, Kansas City, Milwaukee, Nashville and San Diego, 1970.

Chapter 9

AIR QUALITY INDICATORS

What Is Air Pollution and How Serious a Problem Is It?

Air pollution is defined as a "phenomenon of urban living that occurs when the capacity of the air to dilute the pollutants is overburdened."[1] Among the harmful effects of air pollution are its contributions to:

> . . . sickness, diability, and premature death; it can soil and damage building and materials of all kinds; it can injure and destroy farm crops and other vegetation; and it can blight our cities and degrade the quality of our lives. In addition, the more distant future holds the ominous possibility of radical changes in climatic conditions.[2]

The five major air contaminants in millions of tons per year in the United States is given in Table 9.1.

The major sources of air pollution are transportation (42%), fuel combustion in stationary sources (21%), industrial processes (14%), forest fires (8%), solid waste disposal (5%), and miscellaneous sources (10%).[3]

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[1] Council on Environmental Quality, Environmental Quality: First Annual Report, Washington, D. C.: U. S. Government Printing Office, August, 1970, p. 62.

[2] U. S. Department of Health, Education, and Welfare, Toward a Social Report, Washington, D. C.: U. S. Government Printing Office, 1969, p. 29.

[3] Op. Cit., Council on Environmental Quality, Environmental Quality: First Annual Report, p. 64.

TABLE 9.1

ESTIMATED EMISSION OF AIR POLLUTANTS BY WEIGHT[4]
(United States - 1970)

Contaminant	Millions of Tons	Percent of Total
Carbon Monoxide (CO)	147.2	55.8%
Particulates	25.4	9.6
Sulfur Oxides (SO_x)	33.9	12.8
Hydrocarbons (HC)	34.7	13.1
Nitrogen Oxides (NO_x)	22.7	8.6
TOTAL	263.9	100.0%

The contaminants listed in Table 9.1 are not exhaustive. They are the ones of most immediate concern and the ones for which primary and secondary standards of air quality have been elaborated.

In April, 1971, the Environmental Protection Agency set standards for six major classes of air pollutants: carbon monoxide, sulfur oxides, nitrogen oxides, particulates, hydrocarbons, and photochemical oxidants. Two sets of standards were developed--the so-called primary standards were designed to protect public health; the secondary standards were designed to protect against damage to animals, soil, water, vegetation, materials, weather, visibility, and personal comfort and well-being.[5]

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[4] Council on Environmental Quality, Environmental Quality: Third Annual Report, Washington, D.C.: U.S. Government Printing Office, August 1972.

[5] Air/Water Pollution Report, Weekly Worldwide Environmental Newsletter, May 3, 1971, p. 176.

Carbon Monoxide

"Carbon monoxide (CO) is a colorless, odorless, poisonous gas, slightly lighter than air, that is produced by the incomplete burning of carbon in fuels."[6]

Carbon monoxide when inhaled displaces oxygen in the blood and reduces the amount carried to the tissues. In heavily contaminated areas, it can reduce the mental reactions of even healthy persons, impairing their judgement to such a degree that they are made more accident-prone. It is also believed that persons suffering from diseases of the cardiac and respiratory systems as well as those suffering from anemia, overactive thyroid or even simple fevers have an extra burden placed on their ability to handle the disease processes already present.

Exposure to carbon monoxide for eight hours when the air contains as little as ten parts per million of this noxious gas may dull mental performance. Such levels of concentration are commonly found in many large urban centers around the world. In heavy traffic, levels of seventy to one hundred parts per million are not uncommon.

Measuring Carbon Monoxide Pollution

Of the eight cities only San Diego and Nashville provided information on carbon monoxide pollution. Of the two communities San Diego had the most complete information. Both the Nashville and San Diego data suggested a variety of measures that might be employed for purposes of comparing communities with respect to the degree to which carbon monoxide pollution is a serious problem. One method used in both San Diego and Nashville involved estimates of the total annual tonnage of carbon monoxide emitted in the atmosphere. This tonnage was then compared with the estimated permissible tonnage under 1975 Environmental Protection Agency (EPA) standards. Thus, for example, the estimated 1970 emission of carbon monoxide in the San Diego air basin was 615,000 tons.[7]

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[6] Op. Cit., Council on Environmental Quality, Environmental Quality: First Annual Report, p. 63.

To meet 1975 national secondary standards, reduction of 246,000 tons will be required, that is, by approximately 40% of the tonnage registered in 1970. Since 95% of all carbon monoxide emissions in 1970 were from motor driven vehicles, the Director of the San Diego County Health Department stated that car travel would have to be reduced by more than 52%.[8]

Nashville on the other hand reported that its emission of carbon monoxide for the metropolitan area in 1970 was 349,596 tons. Nashville's emission inventory for 1975 calls for a reduction to 35,788 tons per year. The conditions in that area apparently requires a 90% diminution in the emission of carbon monoxide. On this basis the evidence indicates that carbon monoxide pollution is a more severe problem in Nashville than it is in San Diego.

Trend data was available from San Diego but not for Nashville. The forthcoming Nashville report says that only some "initial readings" were available on the pollution of carbon monoxide, sulfate, ozone and NO_x in 1972.

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[7] San Diego Air Pollution Control District, "Summary of Air Contaminant Emissions - San Diego Basin, 1970-1971," December 19, 1972.

[8] Robert Ontell, The Quality of Life in San Diego - 1973, Urban Observatory of San Diego, pp. 283-284.

In addition to the annual tonnage measure, the San Diego air pollution control district also provided trend series data of the annual means of the daily maximum hourly averages of carbon monoxide emission in parts per million dating back to 1962. When 1962 was compared with 1971, it was noted that no progress was made in reducing the carbon monoxide levels over the ten year period.

It is obvious from this discussion that more effort will be required to generate meaningful data with respect to this source of pollution for purposes of intercity comparisons. Additional air pollution monitoring stations will also be required to measure differences within communities.

Nitrogen Oxides (NO_x)

Nitrogen Oxides are gases which are produced when fuel is burned at very high temperatures. When NO_x, under the influence of sunlight, combines with gaseous hydrocarbons, a variety of secondary pollutants called photochemical oxidants are produced. These oxidants associate with solid and liquid particles in the air to produce smog.

Very little is known about the effects of NO_x on health other than those which contribute to smog conditions. However, we know from a study done in Chattanooga, Tennessee, that even very low levels of these oxides in the air are associated with susceptibility of children in that area to Asian flu.[9] The evidence so far established suggests that these oxidants may be harmful to human health. (See section on Photochemical Oxidants)

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[9] Op. Cit., Environmental Quality, First Annual Report, p. 69.

In the United States, about 22.7 million tons of NO_x were estimated to have been emitted into the atmosphere during 1970. This represented about 9% of all pollutants in the air. The principal source of NO_x is from transportation.

Measuring Pollution from Nitrogen Oxides (NO_x)

Because of the multiplicity of measures available, it was almost impossible to compare the pollution levels for NO_x among the cities studied. Most of the measures were for one constituent of NO_x, namely Nitrogen Dioxide (NO_2). At least six separate measures were employed, but these were not used consistently by each city. The measures included the following:

1. The yearly arithmetic mean of periodic means of NO_2 Pollution: The federal standards for the yearly arithmetic mean is 100 micrograms per cubic meter of air (100.0/ug/m^3). Albuquerque, Nashville, and Kansas City, Kansas, used this measure. The Albuquerque readings were given for the years 1968, 1969, and 1970. In 1968 Albuquerque registered a yearly arithmetic mean for NO_2 of 111 micrograms per cubic meter. In 1969 and 1970, Albuquerque registered NO_2 levels which were very close to, but below, the federal standards. In Nashville, on the other hand, readings were given for each of seventeen monitoring stations for the year 1971. The range recorded was between 15.41 and 62.91 micrograms per cubic meter. All values recorded were well below the federal standards. Kansas City, Kansas, supplied similar information for three monitoring stations. Also computed was the mean of the monthly means for the three stations for each month of the year. The arithmetic mean was also provided for each station on an annualized basis and the annual mean of the monthly means were computed as well. In no case did any of the monthly

readings exceed the federal standard. The arithmetic mean for Kansas City, Kansas, in 1971 was 41.60.

2. Tonnage reduction required: Nashville was the only city whcih supplied information on the total tonnage of Nitrogen Oxides entering the metropolitan air basin in 1970. Tonnage information was also given for the projected permissible emissions required to meet 1975 federal standards. It was thus possible to compute the percentage of NO_x reduction required to meet the 1975 standard. In 1970, 22,265 tons of nitrogen oxides were emitted into the Nashville metro atmosphere. The 1975 standards call for a reduction to 7,862 tons thus requiring a 65% retreat from 1970 levels.

3. Annual mean of hourly averages: A standard used by the City of San Diego is a federal requirement that the annual mean of the hourly averages of NO_2 pollution not exceed 0.05 PPM (parts per million) of air. Data for San Diego gave information on two monitoring stations which showed NO_2 emissions exceeded the federal standard in ten of the fifteen years between 1957 and 1971. The worst performance was registered in 1971. The annual means for the two stations were .070 PPM and 0.83 PPM for that year.

4. Percent of adverse days: Another measure used by the San Diego Air Pollution Control District was the percent of adverse days, defined as the percent of days equal to or exceeding the California State Standard of 0.25 parts per million. The data was available for two stations from 1956 to 1971 and the percent of adverse days varied between 0.0 and 4.5.

5. Other measures: Nashville also employed an average of twenty-four hour readings for each station in its area, but supplied no federal or state standard against which to compare such readings.

It is obvious from the variety of measures employed that it will be some time before effective intercity comparisons can be made with respect to measuring NO_2 pollution. There is no best way to accomplish this purpose. Several measures will probably be required to estimate the amount of NO_2 in the atmosphere. Since there are at least three federal standards, it would seem that consistent references to these benchmark requirements would be a good starting point for developing intercity measures.

Hydrocarbons

Hydrocarbons are gases or organic compounds which contain only the elements of hydrogen and carbon. They occur in petroleum, natural gas and also in commercial petroleum products, such as gas, kerosene, aircraft fuels, lubricants, oils, and paraffin. Some hydrocarbons are found are found in coal and coal gas.

Hydrocarbons, widely used in industry, are employed as fuels, lubricants, and solvents, and are important in the manufacture of plastics and rubber products. They enter the atmosphere as a result of evaporation and partial combustion of gasoline and other fuels.

In themselves, hydrocarbons are not harmful to human beings. However, their odors are objectionable. While this would be a sufficient reason for setting hydrocarbon emission standards, hydrocarbons are also involved in the complex reactions with photochemical oxidants to produce agents which are harmful to plants and which produce eye irritation in human beings.

Measuring Hydrocarbon Pollution

Only three of the eight cities, Denver, Nashville, and San Diego supplied information on hydrocarbon emissions. At least four different measures were applied but these were not used consistently in the reports. Measures utilized included tonnage reduction required to meet 1975 standards, annual means of hourly average emissions in parts per million and measures of the proportion of pollutants emitted from transportation and other sources.

Tonnage reduction required: San Diego and Nashville gave estimates of the total tonnage of hydrocarbons emitted into their air basins for 1970 as well as the tonnage requirements to meet minimum standards for the year 1975--now 1977. Estimated total emissions for Nashville for the year 1970 was 86,435 tons. The 1977 goal is to reduce that level to 18,463 tons. This will require a 79% reduction from the 1970 levels. The required reduction for San Diego was from approximately 100,000 tons in 1972 to 46,000 tons in 1977, a reduction of approximately 54%. San Diego authorities estimated that, given present and projected emissions, it would fall short of its goals by about 27,000 tons. Comparable data was not available for the city of Nashville.

Measures of estimated tonnage pollution at present levels compared with projected requirements to meet minimum standards appears to be a useful rough measure for comparing communities. Such measures provide opportunities for making intercity comparisons. Thus, on the basis of the data given above, Nashville appears to have a more serious problem with hydrocarbon sources of pollution than San Diego.

Annual averages of hydrocarbon emissions: Both San Diego and Denver supplied information on the annual average ~~of hydrocarbon~~

emissions in parts per million for the years 1965 through 1971. Average annual emissions in Denver ranged between a low of 2.4 parts per million in 1966 to a high of 3.1 parts per million in 1968. San Diego also included methane emissions in its average. Methane does not enter into the photochemical reactions which produce smog. Methane which accounts for about two parts per million of total hydrocarbon emissions was subtracted from the data on total hydrocarbon emissions for San Diego yielding a range from a low of 2.2 parts per million hydrocarbons in 1965 to a high of 4.3 in 1966. In general, the emissions curves for both Denver and San Diego were quite similar. In the year 1971, for example, Denver had an emission concentration of 3.0 parts per million as compared with San Diego's 3.4 parts per million.

Federal standards for measuring hydrocarbons require that such emissions not exceed .24 parts per million during a three hour averaging time between 6:00 a.m. and 9:00 a.m. Data was not available from either Denver or San Diego for direct comparison with this standard. However, the information which was available indicates that both communities had pollution levels far in excess of the required primary and secondary federal standards.

Source of emissions: The three cities gave varying amounts of information on the relative contributions of hydrocarbon pollutants from a variety of sources. The most detailed information came from San Diego where the air pollution control department identified specific sources of hydrocarbon pollution. Table 9.2 gives information on the percentage contribution of hydrocarbon pollution from stationary and mobile sources for the three cities.

TABLE 9.2

SOURCES OF HYDROCARBON EMISSIONS
1970

City	Source Percent Stationary	Percent Mobile
Denver	5%	95%
Nashville	12%	88%
San Diego	18%	82%

Mobile sources include both aircraft and gasoline and diesel fueled ground vehicles. Of the mobile sources of pollution, 10% or less comes from aircraft sources. As can be seen from Table 9.2, the major source of air pollution is from automobiles and aircraft. A problem in making intercity comparisons on the sources of hydrocarbon emissions is that estimating skills are highly underdeveloped. This may account for the wide variation in the percentages shown in Table 9.2. The 5% figure from Denver, for example, appears to be exceptionally low compared to the cities with which it is compared. Whether these discrepancies are due to different measuring procedures or from other causes was not ascertained.

Photochemical Oxidants

Photochemical oxidants, usually referred to as "smog," are formed as hydrocarbons and nitrogen oxides interact in the atmosphere under sunlight. More smog is produced when the component pollutants are concentrated near the earth's surface by static inversions, and more of it is trapped there.

> The photochemical oxidant family of pollutants includes, (among others) ozone, an unstable toxic form of oxygen; nitrogen dioxide; peroxyacyl nitrates; aldehydes; and acrolein. In air, they can cause eye and lung irritation, damage to vegetation, offensive odor, and thick haze.[10]

Studies have shown that eye irritation begins when oxidant levels reach 0.10 parts per million parts of air. When hourly concentrations average 0.05 to 0.06 parts per million, asthma attacks in some patients increase in frequency. Performance of cross-country runners in a Los Angeles high school suffered when the hourly oxidant level ranged from 0.03 to 0.30 parts per million.[11]

Measuring Photochemical Oxidants (O_x)

Both the federal primary and secondary standards call for maximum emissions of photochemical oxidants of no more than 0.08 parts per million (PPM) during any one hour (average time). San Diego was the only city which submitted information on total photochemical oxidants. In 1971 the percent of adverse days, that is days in which the oxidant levels exceeded the federal standard was calculated for six monitoring stations. The percentage of adverse days ranged from 11% at the downtown station to 56% in El Cajon. There was an overall decline in the level of pollution from photochemical oxidants over the past several years.

In areas of increased population growth, pollution levels increased. Sharp fluctuations in smog levels were attributed to changing weather conditions.

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[10] Council on Environmental Quality, Environmental Quality: First Annual Report, Washington, D.C.: U.S. Government Printing Office, August 1970, pp. 65-66.

[11] Ibid., pp. 68-69.

Particulate Matter

Particulate matter includes:

> Particles of solid or liquid substances in a very wide range of sizes, from those that are visible as soot and smoke to particles too small to detect except under an electron microscope. Particulates may be so small that they remain in the air for long periods and can be transported great distances by the winds. They are produced primarily by stationary fuel combustion (31%), and industrial processes (27%). Forest fires and other miscellaneous sources account for 34%.[12]

Health hazards from particulates vary with the nature of the particulate matter and the concentration of specific substances in the atmosphere. A study done in Buffalo indicates that an annual average concentration ranging from eighty to one hundred micrograms per cubic meter (ug/M^3) of an assorted variety of particulates results in a statistically significant rise in the death rate. This study also revealed a tie between levels of particulate concentration and gastric cancer in men fifty fifty to sixty-nine years old. Similar results were discovered in a study done in Nashville. Levels of eighty to one hundred micrograms are found at different times in most urban areas.

Certain substances cause very specific health hazards. Beryllium, which is emitted from industrial sources and from rocket fuel, causes lung lesions which produce respiratory damage and even death. Health danger levels were cently assessed, and standards for this contaminant have been set by the Environmental Protection Agency.

Asbestos, which has long been known as an occupational hazard, can result in asbestosis, a lung-scarring disease. Mesothelioma is a type of lung cancer almost exclusively associated with asbestos exposure.

Current studies suggest that in some areas of the country, the concentration of lead aerosols are approaching the lower levels of poisoning. Excessive lead in the human body may interfere with the production of blood.[13]

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[12] Op. cit., p. 63.

Like all atmospheric pollutants, particulate levels are significantly affected by weather conditions. Climate, wind direction and velocity, forest and brush fires that occur periodically, and the number of people living within a city and its surrounding areas all influence the level of particulate matter at any given time. The location of industry, transportation facilities and disposal facilities play a part in determining the "natural" potential for particulate pollution in a given area. The frequency and duration of air inversion, that is atmospheric conditions which prevent any upward movement or mixing of the air thus preventing the dispersion of pollutants, also influences the degree to which suspended particulates can become a serious health hazard. Prolonged periods of air stagnation in the presence of "sufficient solar radiation" increases the probability of evolving photochemical smog and toxic secondary pollutants. Nashville, for example, "experienced two such periods for an average of four days each year. During these occurrences, the maximum potential for creating hazardous air pollution concentrations occurs and it is these periods that most concern health authorities."[14]

Measuring Particulate Concentrations

Table 9.3 provides information on the federal maximum primary and secondary standards for suspended particulate matter.

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[13] Robert Ontell, The Quality of Life in San Diego - 1973, Urban Observatory of San Diego, pp. 307-313.

[14] Jack Dennis Hermanson,"The Quality of Life in Nashville," first draft, p. 102.

TABLE 9.3

FEDERAL STANDARDS FOR SUSPENDED PARTICULATE MATTER

	Federal Standards	
Average Time	Primary[1]	Secondary[1]
Annual Geometric Mean	75 ug/M^3	60 ug/M^3
Twenty-four Hours	100 ug/M^3	150 ug/M^3

[1] In Micrograms per Cubic Meter

All of the communities on which information was available reported problems with this source of atmospheric contamination. It was difficult, however, to compare communities, since separate readings were taken at each monitoring station and since the number of such stations varies within each community, it is not possible to make judgements about the total air basin in which such communities are located. Thus, for example, San Diego provided information for only two of its six monitoring stations while Nashville gave information for ten stations.

A digest of information supplied by each community with respect to this problem is given below:

Albuquerque. Albuquerque provided annual information for the years 1968 through 1970. Particulate concentration as measured by the annual geometric mean showed that in 1968 and in 1970 Albuquerque exceeded the federal primary standard of 75.0 micrograms per cubic meter. The highest concentrations were in the "mid-winter months" of November, December, January and February, a period "particularly characterized by atmospheric conditions conducive to trapping pollutants . . ." Data was also supplied on the monthly contaminant concentrations for the year 1970 of lead, copper, zinc, and arsenic. In no case did the concentration of these substances exceed the federal standard during any single month. However, the concentrations of lead approached the federal standard of three micrograms per cubic meter during the month of October 1970. The reading for that month was 2.93 ug/M^3.

Atlanta. Unlike Albuquerque, the Atlanta Observatory did not supply information for the entire air basin. It did supply partial information for the year 1971 on eight of its nine monitoring stations. Information was available on the highest and lowest daily observations, the total number of observations and the average of these observations in micrograms per cubic meter. Table 9.4 which was derived from the data supplied was included as an example of a possible format for presenting information on particulate concentrations.

Since the information above is incomplete, it is difficult to draw inferences about the severity of the particulate emissions problem in Atlanta.

The Atlanta Observatory also included information on the source and estimated tonnage of suspended particulates in 1971. Table 9.5 is taken from information supplied by the Atlanta Observatory and is included in the text to show that suspended particulate emissions are primarily attributable to stationary sources of pollution. Only 23.6% of suspended particulate emissions was from transportation sources in Atlanta in 1971 according to the data furnished. Suspended particulates were 7.6% of the total tonnage of pollutants emitted into the Atlanta air basin atmosphere in 1971.

TABLE 9.4

PARTICULATE CONCENTRATIONS
(Micrograms per Cubic Meter)
Atlanta - 1971

Station	Highest Daily Observation	Lowest Daily Observation	Total Number of Observations	Average Concentration
South River	148	34	20	73.0
Airport	156	36	21	98.0
East Point	106	22	21	77.0
Fire Station #34	104	28	20	63.0
Scott School	138	46	19	89.0
Rivers School	86	27	17	58.0
Georgia Tech	198	17	17	96.0
Bass School	123	16	17	61.0

TABLE 9.5

SOURCE AND ESTIMATE TONNAGE OF SUSPENDED PARTICULATES
Atlanta - 1971

Source	Total Tonnage	Percent of Total
Industrial Processes	18,120.7	33.0%
Refuse Combustion	3,051	5.6
Fuel Consumption		
Industry	251.4	0.5
Business and Domestic	209.0	0.3
Power Production	20,311.8	37.0
Transportation	12,957.7	23.6
TOTAL	54,901.6	100.0%

Denver. The Denver Observatory supplied a single table which gave information on suspended particulate emissions for each month of the year from 1964 through 1971. Average annual emissions varied between a reading of 95.0 ug/M^3 in 1967 to a high of 127 ug/M^3 in 1965. Thus, all of the readings for the eight year period on which information was submitted were substantially above the maximum federal primary standard of 75.0 ug/M^3. Of the totl of ninety-six separate monthly readings, there were only three which were lower than the federal primary standard. On the basis of the data supplied, Denver appears to have a serious problem with this source of air pollution. The data also indicates that the problem is most severe during the cold season. The highest readings in 1971 were for the months of November through March.

Nashville. Nashville supplied information on the annual geometric mean and on maximum twenty-four hour readings for ten air monitoring stations for the months of August through December 1969. Like Denver, Nashville has a severe problem with particulate pollution. The federal annual geometric mean standards of 75.0 ug/M^3 was exceeded by eight of the ten stations. The readings ranged from a low of 55.5 to a high of 160. The federal primary standard for a twenty-four hour average reading is 260 ug/M^3. Two of the ten stations reported maximum twenty-four hour readings which exceeded the federal standard. One station recorded a reading of 544.0 on December 12, 1969. The range of the maximum twenty-four hour readings was from a low of 100.2 to the high given above. If the federal secondary standard of a twenty-four hour reading of 150 ug/M^3 is employed as a yardstick the Nashville data indicates that this level was "exceeded a total of twenty-five times in the first four months of sampling, with samples taken on one random day for each six-day period.

"Continuous samples could have increased this by a startling five-fold and yielded a much larger number of days in excess of the standard." The report cautions that "air pollution problems in Nashville must be put in proper perspective" since the highest readings come during the fall and winter months. "This is the period having the greatest number of air inversions and periods of low wind velocity. The fact that the maximum daily readings for suspended particulates occurred on December 12 at six of the sampling stations clearly illustrates the potential for an abnormally high reading as the probable result of an air inversion."[15]

San Diego. San Diego supplied information about particulate concentrations for only two of its monitoring stations. Information was available from 1957 through 1971. During those years, of the total of thirty annual readings taken, only one met the federal annual primary standard of 75.0 $\mu g/M^3$ concentration of suspended particulates. While the readings have shown a decline since 1960, the most recent readings of 76.0 and 98.0 at the two stations indicate that further effort is required to reduce this source of atmospheric pollution. To meet the 1975 emission standards, suspended particulates in San Diego basin will have to be reduced by 69% of the 1970 levels. The local air pollution district predicts that these emission standards will be met.[16]

The San Diego Observatory included a special section in its report on lead aerosols. The finding was that the "average lead concentration has already exceeded the World Health Organization air quality guide of two micrograms per cubic meter. The annual average in San Diego for 1971 was 2.1 ug/M^3. Control over this contaminant will come most rapidly with reduction of lead use in gasoline. Lead-free gasoline, defined as maximum concentration of .05 grams per gallon, will abate the current problem.

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[15] Ibid., p. 112.

[16] Air Pollution Control District, San Diego County Public Health Department, San Diego Implementation Plan, 1971, p. 7.

Sulfur Oxides (SO_x)

> Sulfur oxides are acrid, corrosive, poisonous gases produced when fuel, containing sulfur, is burning. Electric utilities and industrial plants are its prime producers since their most abundant fuel is coal and oil, which contain sulfur as an impurity.[17]

About 60% of all sulfur oxides come from the burning of coal; about 14% comes from oil fuels and an additional 22% from industrial processes which use sulfur. Most of the coal and oil is burned in power generator plants. About two-thirds of the sulfur oxides caused by combustion are emitted into the atmosphere. Seven industrial states in the Northeast are responsible for releasing about one-half of the national total of sulfur oxides into the atmosphere.

Reduction of sulfur dioxide emissions can be managed by switching to low sulfur fuels, (those with less than 1% sulfur content), removing sulfur from fuels, and removing sulfur oxide from combustion gases.[18]

Sulfur oxide gases can cause temporary or permanent injury to the respiratory system. When particulates are inhaled along with oxides, health damage is increased considerably. Pollution disasters are usually associated with sharp increases in levels of sulfur oxides and particulates. Sulfuric acid which is formed from sulfur dioxide when water is present can penetrate deep into the lungs and damage tissues.

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[17] Council on Environmental Quality, Environmental Quality: First Annual Report, Washington, D.C.: U.S. Government Printing Office, August 1970, pp. 65-66.

[18] Ibid., pp. 64-65.

Serious health hazards can result when the concentration of sulfur dioxide rises to about 0.04 parts per million. When this level of sulfur dioxide is accompanied by smoke concentration of about 0.06 parts per million, deaths from bronchitis and lung cancer may increase. Many American cities often exceed this annual mean concentration of SO2. When SO_x levels have exceeded 0.11 ppm for three to four days, adverse health effects have been observed. This level is reached in many large cities during periods of surface air inversions.

Measuring Sulfur Dioxide Pollution

At least five separate methods for measuring sulfur dioxide emissions were identified in the five cities which supplied information on this pollutant. The cities were Albuquerque, Denver, Kansas City, Kansas, Nashville and San Diego. The measures used by one or more cities were as follows: (1) The federal annual average maximum standard of 80.0 ug/M^3 (80 micrograms per cubic meter of air); (2) the federal standard which calls for an annual average of 0.03 parts per million of air. This is the federal primary standard. The secondary standard is 0.02 ppm; (3) the federal primary standard of .14 parts per million based on the average of twenty-four hour average readings. The secondary standard is .10 ppm; (4) estimates of total tonnage emitted in 1970 and the required tonnage reduction to meet federal standards by 1977; (5) the highest twenty-four hour SO_2 readings.

Tonnage reduction requirements. San Diego and Nashville both gave information on the tonnage of SO_2 pollution. In 1970 San Diego estimates that 12,126 tons of SO_2 were emitted into the air basin. Approximately two-thirds of the tonnage was from power plants and the remainder from other sources including 22.3% from Naval installations in the area. SO_2 emissions were expected to increase in San Diego because of increased demand for fuel and an expected decrease in the availability of natural gas. The air pollution control district currently limits the amount of sulfur in fuels to 0.5% by weight. However, as a result of the energy crises this standard may be relaxed. Despite this, San Diego expects to meet the federal standards by 1977. SO_2 pollution has not been a problem in this community.

Similar information from Nashville indicates that SO_2 pollution has not been a problem there. In 1970 authorities estimated that 23,557 tons of sulfur oxides including SO_2 were emitted into the atmosphere. To meet federal standards, no decrease in this tonnage is required. Nashville's goal for 1975 is to maintain the 1970 tonnage.

Annual Averages of SO_2 Pollution

Albuquerque, Nashville and Kansas City supplied data relative to the federal primary standard which requires that the annual arithmetic mean of SO_2 emissions does not exceed 80.0 ug/M^3. The secondary standard is 60 ug/M^3. In all three communities the annual average was well below the federal maximum. Albuquerque gave data for 1968 through 1970. Annual average readings ranged from 4.9 to 6.3 ug/M^3. MacNamara commenting on these findings said that "Bernallilo County falls well below the national SO_2 danger level thanks primarily to the absence of power plants and smelters in the vicinity."[19] Similarly, the annual average of each of the eighteen monitoring stations in Nashville, Tennessee, were well below the federal standards. The range among the stations was from a low of 7.86 to a high of 19.78. This is also true for Kansas City, Kansas. Full monthly readings were reported for five of the eight stations in that community and the annual mean varied between a low of 8.0 to a high of 22.0.

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[19] Patrick H. McNamara, A Social Report for Metropolitan Albuquerque, January 1973, p. 83.

Another annual average measurement used by some communities for the federal primary standards is 0.03 PPM of air. Denver gave information on the annual averages for the years 1965 through 1971 inclusive. The variation during those years was from a low of .005 in 1967 and a high of 0.19 in 1965. Thus, all annual readings during the seven years were well below the federal primary standard of 0.03.

Highest twenty-four hour reading. Nashville and Kansas City, Kansas supplied information on the highest twenty-four hour readings of SO_2 in ug/M^3 for each of their monitoring stations during the year 1971. In Nashville the eighteen stations which recorded such measurements showed a twenty-four hour highest "reading variation" between 7.86 and 1074.23. Five of the eighteen stations had twenty-four hour "highest readings" which exceeded the annual federal mean primary standard of 80 ug/M^3.

Kansas City, Kansas, supplied information on the highest average monthly readings for eight monitoring stations, only five of which had complete information for each month of 1971. The range of monthly variations was between 2.20 and 211.00. However, of the total of seventy-six monthly readings, there were only two which exceeded the federal primary standard of 80 ug/M^3.

In summary, information from the five cities for which data were available indicates that all had SO_2 readings which were well below federal standards. None of the communities anticipated any difficulty in meeting the 1975 federal standards for SO_2 emissions, although San Diego did expect a deterioration from its current levels as a result of increasing population growth and the decreasing availability of clean fuels.